

Strategic Information Technology Plan Update



*Providing An Information
System We Can All Use*



September 1998

TABLE OF CONTENTS

INFORMATION TECHNOLOGY VISION	2
POLICY ON APPLICATIONS DEVELOPMENT.....	4
POLICY ON DATA	5
POLICY ON TECHNOLOGY	6
POLICY ON ORGANIZATION	7
YEAR 2000 ACTIONS.....	8
TECHNICAL TRENDS FOR THE PSC.....	9
DESCRIPTION OF THE PSC'S USE OF INFORMATION TECHNOLOGY	11
ITS CURRENT USE AND ITS VISION OF THE FUTURE	11
SPECIALIZED HARDWARE AND SOFTWARE	12
PSC IN-HOUSE APPLICATIONS DEVELOPMENT	12
INTERNET \ WEB SITE DEVELOPMENT.....	12
FUTURE PLANS – NEAR TERM	13
FUTURE PLANS - LONG TERM	13
APPLICATIONS ARCHITECTURE.....	15
DATA ARCHITECTURE / INVENTORY	20
TECHNOLOGY ARCHITECTURE	22
DESKTOP HARDWARE.....	22
NETWORK HARDWARE	22
DESKTOP OPERATING SYSTEMS AND APPLICATIONS.....	26
NETWORK OPERATING SYSTEMS AND APPLICATIONS	27
NETWORK CONNECTIVITY INFRASTRUCTURE	28
ORGANIZATION ARCHITECTURE	31
IMPLEMENTATION PLAN	33
PROJECT PROPOSALS.....	36

INFORMATION TECHNOLOGY VISION

"PROVIDING AN INFORMATION SYSTEM WE CAN ALL USE"

"Providing" includes designing, developing, acquiring, implementing and modifying systems or processes, whether manual or automated, which are capable of gathering, analyzing, reporting, displaying, disseminating or otherwise moving information around.

"Information" is meant in the broadest sense of the word. It includes all forms: voice, data, text, graphics, video image, etc. and content imaginable: utility, supplier, ratepayers, Commission, financial, operating, demographic, geographic.

"System" is meant in the broadest sense of the word. It includes a variety of interconnected networks serving a multitude of user needs. This "system" is continually evolving because of technological advances.

"WE...all" is also broadly construed: utilities, ratepayers, employees, Commissioners, intervenors, political entities, etc. It conveys the concepts of "teamwork" and "partnership".

"Can...Use" implies widespread ease of access to and usefulness of information. In other words, information systems and the content they hold should be easily accessible to all, where appropriate, and be capable of reporting and displaying useful information in a discernible way to many diverse users. This may require various levels of information complexity and detail. The words also mean that users can easily manipulate and convey information back to others.

INFORMATION TECHNOLOGY VISION

"PROVIDING AN INFORMATION SYSTEM WE CAN ALL USE"

In a way that:

- provides for maximum accessibility of information and tools to all customers...
- makes information available from as close to the source as possible...
- provides direct links to facilitate exchange of information with customers within the constraints of security and confidentiality...
- processes information into its most usable form: voice, text, graphics, video image...
- provides information at the appropriate level of detail for different situations and users...
- uses standardized processes for designing, developing and documenting systems that are flexible and amenable to change...
- facilitates seamless transfer of information...
- looks for opportunities to use ready-made software...
- harnesses the use of "expert systems" to analyze information...
- provides the transition to a paper-less environment...
- supports QI projects by looking for ways to streamline processes...

so that the Vision and Mission of the Public Service Commission can be realized.

POLICY ON APPLICATIONS DEVELOPMENT

Applications include commercially available, “shrink-wrapped” software, systems developed using standard supported software such as database, spreadsheet, word processing macros; systems using purchased software solutions such as a project management system; or programs written using programming languages such as PowerBuilder, Visual Basic, and COBOL. Applications do not include operating system or network operating systems such as NT Server, NetWare, or Windows.

Common-use applications are developed using a standard development methodology to assure user-friendly, consistent documented systems on an appropriate computing platform.

Maintain resources to assist development of new applications or systems and to determine if a solution already exists which will minimize redundancy and duplicative systems.

- This includes the concept of:
 - Data administration and establishment of standards for data and data base maintenance.
 - Maintenance of an applications and data inventory; and
 - Dissemination of the availability of such data and applications to all potential users through outreach and education processes.

POLICY ON DATA

Data is to be managed as an agency resource and must:

- provide controlled, timely and accurate information
- minimize duplicative sources of the same data
- provide an accessible base of information for applications development
- be developed and maintained in a cost effective manner
- guarantee integrity (value) and security (confidentiality)

Data will be available to users in the most effective and easy to use way that can be achieved without compromising other data management policies.

Data will identify ownership (who has update authority) and access authorization.

The Office of Information Technology will evaluate policies and data documentation and arbitrate disputes that may arise between owners and users of data.

Agreements must be established between the PSC and other entities for the purpose of data sharing.

Backup of data files is done on a regularly scheduled basis, and recovery procedures are in place to recover lost, damaged or destroyed data.

Retention and deletion guidelines are established.

Confidential information is adequately protected.

Data requirements are documented as a mandatory part of new systems development and systems enhancement activities.

A data dictionary and data models are produced as a required product of applications development and include clear business functions and usage rules and become part of the systems documentation.

POLICY ON TECHNOLOGY

Technology refers to hardware, software, systems and standards that an organization uses to develop and operate computer systems and to store and process data. It includes computer, fax, printer, scanner, video and telecommunications equipment, operating systems software, communications software, office support systems, methods for developing and maintaining systems, and the organization's technical standards.

This policy on technology provides that:

- Purchases of equipment will meet the minimum state standards and will be purchased from the state bulletins, where applicable.
- The agency policy for desktop computer replacement is four years.
- The agency policy on network hardware upgrades and infrastructure upgrades is to invest additional funds in upgrading equipment on a three-year cycle with investments directed at improving productivity and reliability.
- Illegal software will not be loaded on agency computers; no illegal copies will be made of purchased software.
- Non-supported software must meet the following standards or be removed:
 - The software will have or create no deleterious impact on the PC network and supported software, the individual's PC, operating system or installed supported software;
 - The software must be approved by the user's supervisor and used for a specific business need; and
 - The user must inform the Office of Information Technology of the installation of the software, so that any problems can be properly documented.
- Agency operating system configuration files will not be altered by users.
- Technology equipment is an agency asset that will be inventoried, physical security maintained, and home use will be allowed when authorized by management.
- Adequate means will be developed to maintain network security.
- Backup and recovery functions will be implemented and used on a regular basis.

POLICY ON ORGANIZATION

Organization refers to the staff resources for IT to manage the applications, data and technology and how they are used in support of the agency's mission.

This policy on organization provides that:

- Computer related training will be offered annually to all staff. This training will be based upon need and level of knowledge required for job proficiency. This training will provide a minimum working knowledge for agency positions and will encourage staff to achieve a continuously higher working knowledge of the agency IT resources.
- Adequate IT support will be available to ensure operating reliability of the computer network, systems, applications and other IT-related equipment
- Adequate IT support will be available to promote continuous improvement in users' ability to effectively use our IT resources.
- In case of a disaster, a disaster recovery/business resumption plan containing sufficient information, direction and backup will be available to bring the agency back to an operational level
- An ongoing business analysis is made of OIT resources to assess the impact of new IT functions, initiatives, support and training on the unit's operation, and to assess the effectiveness of the organization in providing the IT management, support and development necessary to achieve the agency's goals and objectives.
- The agency's top management team will participate in setting priorities for the work of the Office of Information Technology in order to insure that the agency's IT projects are aligned with the agency's key business objectives.

YEAR 2000 ACTIONS

The PSC has thoroughly inventoried its hardware, software, applications, network and building management applications for potential Year 2000 (Y2K) concerns. We have found very few problems, largely because of the recent vintage of this equipment. The agency's current location was built in 1995 and has a security system, elevators, ISDN phones and other building management equipment. The agency has worked with the building manager to investigate potential Y2K problems. To date, our vendors have certified that all such equipment is Y2K-compliant. We have tested desktop PCs and servers and confirmed the vendor statements that our latest equipment is Y2K-compliant. All such equipment that was found Y2K non-complaint will have been replaced by the end of calendar year 1998.

PSC staff are in the process of reviewing desktop PC applications (spreadsheets, mini-databases, etc.) for Y2K concerns, but we do not have any applications of this sort that are considered critical to the continued efficient operations of the agency. We also do not receive large amounts of data from outside the agency for which Y2K issues will be a concern.

The main focus of the agency's Y2K efforts are on existing mainframe legacy applications that the agency has used for case management, customer complaints, utility annual report data, utility names and contact information, employee payroll and personnel information and the agency billing system. As of the date of the submission of this strategic IT plan, we expect to have replacement applications developed in PowerBuilder for customer complaints, case management, utility annual report data, and utility name and contact information. During FY 99, we expect to complete the migration of the remaining applications from the mainframe to the LAN-based, client-server environment. The last and most critical of these systems will be the agency's billing system. Completion of this project depends on prior completion of many of the other systems, which is why the agency began replacing them beginning in 1996. At this point in time, we do not foresee any significant concerns in being fully Y2K-complaint by mid-1999.

As part of the overall statewide effort to assure Y2K compliance, at DOA's request, the PSC sent out a survey to all electric, telecommunications, natural gas and water utilities requesting a status report on their respective Y2K activities. The survey was sent out in late July 1998 and all survey responses were due by the end of August 1998. Initial review of those responses indicates that the utilities are well positioned in their Y2K efforts to be in compliance by mid-1999.

TECHNICAL TRENDS FOR THE PSC

Current and upcoming trends

- ◆ The age of the agency's existing network, the overall national trend toward Fast Ethernet as a standard for LANs and the need to provide increased bandwidth to enable audio and video on the LAN make it imperative for the agency to replace and upgrade its current infrastructure from the existing Token-Ring-based network to a high-speed, Fast Ethernet switched network.
- ◆ The increasing need to communicate clearly with customers and suppliers and the decreasing cost of technology available to deploy audio and video over the local area network require the agency to investigate the possibility of integrating its existing video conferencing capabilities with its new network capabilities in conjunction with the conversion of its network to Fast Ethernet.
- ◆ The need to insure that all of the agency's systems are Year 2000 compliant requires the agency applications development staff to build new client/server versions of these systems to both eliminate any Y2K concerns and provide more functionality and ease-of-use for those systems.
- ◆ The number of customers for the agency's services who have Internet access is increasing almost geometrically. Therefore, an increasing number of the agency's services and information should be made available on the agency's Internet Web Site.
- ◆ The need for agency staff to be able to communicate and accomplish their work when they are not in the office is increasing, putting a strain on the ability of the agency IT support staff to deliver services at all times when they are needed. Additional steps to make remote computing capability available to more staff may be necessary in the future.
- ◆ The use of Geographical Information Systems (GIS) to categorize and characterize data to be able to target the appropriate customers with the necessary information will increase and the agency's deployment of GIS will similarly increase.
- ◆ As the number of organizations and locations deploying video conferencing technology increases, the agency would expect to increase its use of its video conferencing for conducting essential portions of its business. Some experimentation has already begun with conducting hearings and providing training over video conferencing facilities and these activities are expected to increase rapidly over the next couple of years.
- ◆ Utility customers' needs for information about available services, potential service providers and possible conditions of service continues to increase as the agency enables development of more market-based utility services. This requires an increase in the use of technology to be able to deliver that information to customers when, where and how it is needed.

- ◆ The need for the agency's suppliers (utilities and other service providers) to have applications for regulatory approval processed in a timely manner has sharply increased recently, requiring the agency to re-evaluate its current processes and attempt to incorporate procedures like electronic filing into those processes. This will also require the agency to examine available technologies for imaging and electronic document management, as well as encryption and digital signatures to assure that this type of information is as secure as it needs to be.

Statewide activities and policies

- ◆ Opportunities abound for collaboration with other agencies, such as the Department of Justice (DOJ) and the Department of Agriculture, Trade and Consumer Protection (DATCP) in the area of providing accurate and timely information to customers about the choices among utility service options that customers will have as the PSC moves to a more market-based regulatory environment. One project of this type has already been accomplished which resulted in the joint production of a series of telecommunications brochures. The announcement of the completion of this project was accomplished in a joint press conference performed over the PSC's video conferencing facilities. As activities increase in such areas as the Internet, additional opportunities will arise for presenting links between agencies that provide complimentary information of value to consumers.
- ◆ The area of GIS information holds significant opportunities for state agencies to develop standardized methods for collecting and maintaining GIS data so that GIS information can be readily exchanged and used regardless of which agency is responsible for maintaining and updating the data. The PSC needs to work with DNR and DOA to assure that data layers can be freely exchanged, as this will allow the PSC and DNR to provide additional information services in the future.
- ◆ The efforts at the state level to develop standard forms using standardized software allows the ability to share such information and reduces the need for each agency to develop the same form many different times for the same purpose. These forms should also be Internet-enabled, so that customers of the state can fill out forms on the Web.
- ◆ Efforts of DOA and others to perform research and develop standards for data encryption and digital signatures will speed the process of incorporating such tools into the agency's processes. This will be particularly useful for insuring the legality of some of the information filings required as part of the PSC's processes and should pave the way for a significant increase in electronic document interchange.
- ◆ DOA's effort to coordinate e-mail communications to enable the sharing of a statewide e-mail directory will increase the agency's ability to collaborate with other agencies through the use of shared e-mail capabilities.

DESCRIPTION OF THE PSC'S USE OF INFORMATION TECHNOLOGY -

ITS CURRENT USE AND ITS VISION OF THE FUTURE

In 1996 and 1997, the PSC took major steps toward meeting the statewide IT infrastructure standards. All desktop PCs were converted from OS/2 to Windows 95 or Windows NT Workstation 4.0 and all business applications were migrated to the Microsoft Office Professional 95 suite (Word, Excel, PowerPoint and Access). In 1998, all workstations were converted to Microsoft Office 97 and Outlook 98 for e-mail and group scheduling and Microsoft's Internet Explorer 4.01 for Internet Web browsing.

The PSC's network was upgraded to new servers that are more powerful and the network operating system was converted from OS/2 LAN Server to Windows NT Server 4.0. Four servers provide file and print services and act as application servers, one server is used exclusively to provide e-mail and scheduling services, and one server acts as a Web server. In addition, the PSC has specialty machines for other services, including a fax server with four lines; one firewall server; a 56-disk CD-ROM jukebox; and a dial-in/dial-out remote access device with six lines. The PSC uses Microsoft's Exchange Server 5.5 for e-mail and calendaring services and Microsoft's SQL Server 6.5 is used for the agency's enterprise level database. The PSC also uses MS Systems Management Server for network monitoring, inventory, and automated software distribution. A tape backup unit with a capacity of 48 GB backs up all necessary network files nightly. By moving quickly to implement many of the new state standards, the PSC has provided its staff with better tools to carry out their responsibilities in a more efficient manner, while lowering the costs of IT resource acquisition and support.

The PSC physically occupies four floors of a building constructed in 1995. Cabling for the building consists of vertical fiber between the four floors and horizontal Category 5 wiring on each floor. The PSC's local area network is connected to the state of Wisconsin's network infrastructure through a T-1 connection, which provides all of the PSC's employees with direct access to the state's mainframe computing environment and access to the Internet. The PSC uses only the TCP/IP network protocol over a 16 MBPS Token-Ring network. (See attached network diagram) A Network General (now Network Associates) device called a network protocol analyzer (or Sniffer) is used for network troubleshooting. This system has been in place since 1995 and is in need of replacement and upgrading.

Since 1996, the PSC has purchased and installed Pentium Pro and Pentium II PCs. As of July 1, 1998, the PSC had 30-40 remaining 486 PCs that had yet to be replaced. Some of the older machines when replaced will be used for the agency's new technical education center. We expect to replace the remaining 486s by the end of 1998. We have standardized on machines with 64 MB of RAM, 4.3 GB hard drives and CD-ROM. We also have a dozen or so laptop PCs, primarily for those employees who travel frequently, and a few for shared use by occasional travelers.

SPECIALIZED HARDWARE AND SOFTWARE

In addition to the standard hardware and software described above, the PSC has also made available to its staff specialized hardware. This equipment includes two desktop scanners (one with sheet feeder) and a digital camera for photographing potential construction sites and for performing field investigations. The PSC's primary hearing room is equipped with a state-of-the-art PictureTel videoconferencing system and we also have two multimedia projectors for making computer-based presentations.

The PSC has several workstations equipped with the ArcView Geographical Information System (GIS), which is used for analysis of service territories, service offerings by utility, and analysis of construction applications, among other things. The PSC's lawyers use a variety of legal databases (Shepherd's, WisLaw, Lexis-Nexus, etc.) and other legal resources. The PSC's analysts and engineers use sophisticated simulation models, including the EGEAS generation expansion model from Stone and Webster, the PSS/E transmission load flow model from PTI, and WinUPLAN-G, a natural gas capacity planning model.

PSC IN-HOUSE APPLICATIONS DEVELOPMENT

The PSC's applications development staff creates applications using PowerBuilder 6.0 as its primary development environment. The applications staff has also developed certain specialized applications using Microsoft's Access 97 and Visual Basic 5.0. The PowerBuilder applications that have been developed include one system to allow telecommunications utilities and one system for municipal water, electric, gas and sewer utilities to electronically prepare and file their annual reports with the PSC. This application was produced on both floppy diskette and CD-ROM and was made available to all utilities and all annual report preparers. It was also made available on the PSC's Web site.

The other major application prepared in PowerBuilder is the PSC's Customer Contact System, which allows the PSC to build and maintain a database of the more than 10,000 complaints and inquiries we receive each year. The Access 97 applications that have been developed include: a staff training database (ETAS); a water tariff database; a legislative tracking system; a problem log system for annual report helpdesk calls; an equipment inventory system; and a legal action tracking system.

INTERNET \ WEB SITE DEVELOPMENT

The PSC operates and maintains an Internet Web Site (<http://www.psc.state.wi.us/>) on an in-house server running on Windows NT 4.0 Server and Microsoft's Internet Information Server 4.0. The PSC's Web Site is segmented primarily by industry and includes various staff lists and contacts, agency publications, orders, events (meetings, hearings, minutes, agendas) and special documents, such as a map and accompanying data links showing approximate water bills by county and the annual report on telecommunications infrastructure in Wisconsin. The PSC uses FrontPage 98 to edit and maintain its Web Site and plans to develop an Intranet within the next year.

FUTURE PLANS – NEAR TERM

The PSC has obtained additional space at its current location, a portion of which will be designed as a technology education center (TEC) and PC setup room. This area will be fully connected to the existing LAN. The agency expects to have the training room completed and fully functional by the fall of 1998. Another project we hope to accomplish in the next year is the broadcast of audio and video on our LAN. This will enable us to send the output of our videoconferencing system in our hearing room directly to select desktop PCs or, potentially, over the Internet.

On the applications development front, 1998 and 1999 will be occupied with the migration of our remaining mainframe applications to the PC/LAN environment. This will alleviate any remaining Year 2000 concerns that exist in these legacy applications. It will also enable the PSC to begin the process of solidifying its data model in our PC/LAN, SQL Server environment, which will establish a firm foundation for future applications development for the PSC.

FUTURE PLANS - LONG TERM

The PSC and the utilities it regulates are undergoing rapid change – in the telecommunications industry, customers are encountering new service providers and new services almost every day. We expect this trend to accelerate and encompass the electric and natural gas industries as well. As customers continue to have more and more choices for utility services and service providers, the PSC's vision of the future indicates a need for an independent entity to which customers can turn for clear, non-biased information about those choices. The role of the PSC to offer certain protections for customers will also expand, as with these choices we have already seen a vast increase in the number of complaints from customers about the service providers they have chosen. Because the PSC in Wisconsin is on the leading edge of state commissions that are moving forward toward more market-based utility services, there is also a need for the agency to promote key concepts in state and national forums to provide information to other decision-makers (federal agencies, Congress, the state legislature) and to the public about "best practice" initiatives that should be promoted. In all of these activities, the need for the agency to conduct its business more efficiently and to communicate the necessary information to the appropriate people and organizations will bring the use of information technology to the forefront of the agency's strategic business activities even more than it has in the past.

Our vision of how we will use information technology in the future is centered on our vision of the agency's new role in the future, as described above. Our IT vision includes a substantial increase in electronic communications with our customers and suppliers. We expect that over the next 5-10 years we will be able to improve our systems and processes to the point where all utility applications and other filings with the PSC can be made electronically through the use of standard formats. Once filed, this information will be shared with the agency staff and the public in electronic form. The information will be stored in our Records Management area on optical disks (or other suitable storage media), and will be accessible to both staff and the public over our local area network or the Internet. Some of this

information will be compiled and manipulated by technical experts on staff to make the information easy to read and comprehend by utility customers as they prepare to make choices in their utility services and service providers. The information will then be made available to the public on the Internet and the agency's Intranet, so that the public can access it themselves or agency staff responding to phone calls or e-mail will have the same information available.

When it is necessary to hold meetings or conduct hearings for particular agency actions, the agency will substantially increase its use of its videoconferencing facilities to link with schools and other sites. This will make hearings and meetings more accessible to the public while minimizing the time to arrange and conduct these activities. The PSC will also broadcast its open meetings and other important events over the Internet, so that utilities and customers can "tune in" and experience the decision-making process as it happens. The PSC will use specialty applications like GIS to manage the flow of information to customers by preparing information specifically targeted to certain customers in a particular location, such as along the route of a proposed power line. If successful, utility service providers and utility service customers will be able to access any information related to the PSC from virtually anywhere in the world at any time.

APPLICATIONS ARCHITECTURE

The PSC is quickly moving toward a client-server based applications architecture in which closely related data will be consolidated and centrally administered. However, access to the applications and data will be available on every user's desktop through a simple and easy to use interface. Wherever possible, duplicative data will be eliminated and data being collected will be verified and edited as close to the source as possible. Applications that are developed by the PSC are closely linked to the agency's data model which, in turn, is closely tied to the agency's strategic business plan objectives.

The applications development environment at the PSC depends largely on PowerBuilder and uses SQL Server 6.5 as an enterprise database. Several of the applications that have been or are in the process of being developed share certain data components between them. Access to applications is determined by need, the application itself and the operating system environment. The PSC has attempted to simplify its application development environment so that all new applications that contain enterprise data referred to in the data model are developed with PowerBuilder and the data is stored in SQL Server database tables.

The following applications are currently in use by the PSC. Where they are in the process of being converted to PowerBuilder client-server applications, that is noted in the description:

Name of Application	Utility Electronic Annual Report Systems (TARS and WEGS)
Description	This application was designed to allow utilities to fill out and file their annual reports to the PSC in electronic form and replaces one of the agency's legacy mainframe applications that also had some Year 2000 concerns.
Platform	Written in PowerBuilder, the program runs on Windows 95 and Windows NT. It uses MS Access 97 for local database management and then the data is loaded into SQL Server at the PSC. It requires a minimum of a Pentium processor, 16 MB of RAM and 30 MB of free hard disk space.
Package / Custom	This program was written by PSC applications development staff with initial assistance from an outside contract programmer.
Year implemented	First implemented in early 1997 for the 1996 annual reports for telecommunications utilities, it has since been expanded and upgraded to include all municipal water, electric, natural gas and sewer utilities for the 1997 annual reports filed in the spring of 1998. A further revision is planned during 1998 to allow the program to be used without modification during 1999 and for subsequent years if required.
Method of Access	The annual report system is a standalone program that can be run on an individual PC or through a network.
Est. # of Transactions Per Hour, if appropriate	NA
Users of the Application	The program is available to all of the municipal utilities and to Local Exchange Carriers. It is mandatory that it is used by the telecommunications utilities; starting in 1999, it will also be mandatory for the municipal utilities to use the program. There are about 85 telecommunications utilities and more than 500 municipal utilities that will eventually be using the software. Within the agency, there are about a dozen regular users of the software and 50-75 occasional users.

Name of Application	Customer Contact System
Description	This application is used by the agency to record and track inquiries, complaints and opinions submitted to the agency by utility customers and other entities who contact the PSC to present their comments on a particular subject or case. This system replaced the legacy mainframe complaint system previously used by the agency and eliminated potential Year 2000 concerns. The PSC currently records information on about 10,000 complaints, inquiries and opinions each year with this system.
Platform	Written in PowerBuilder – runs on Windows 95 and Windows NT and uses SQL Server for database management. Hardware requirements are non-specific, but it generally runs on a Pentium-processor based machine with at least 32 MB of RAM and 20 MB of free hard disk space.
Package / Custom	This program was custom designed and written by PSC applications development staff.
Year implemented	The software was first implemented on January 1, 1998.
Method of Access	The application resides primarily on the user's PC and the data resides in the agency's SQL Server database management system.
Est. # of Transactions Per Hour, if appropriate	NA
Users of the Application	The application is primarily used by the agency's consumer specialists in the Division of Water, Compliance and Consumer Affairs (DWCCA). There are 5-6 daily users of the system. Other staff in the agency has been given access to the system and uses it occasionally; the number of these users varies from 5-30.

Name of Application	Case Management System
Description	This application is used by the agency to track and record information about utility cases that are pending before the PSC. Utilities file applications with the agency as required by law to change rates for service, build new facilities, change rules for providing service and a variety of other actions. The Case Management System is used for recording transactions and events related to each case, including the date on which each event occurred and also provides links to relevant documents on the agency's local area network. Information on the cases will be used to provide input to the agency's billing system. This system replaces a legacy mainframe case tracking system and will eliminate potential Year 2000 concerns.
Platform	Written in PowerBuilder – runs on Windows 95 and Windows NT and uses SQL Server for database management. Hardware requirements are non-specific, but it generally runs on a Pentium-processor based machine with at least 32 MB of RAM and 20 MB of free hard disk space.
Package / Custom	This program was custom designed and written by PSC applications development staff.
Year implemented	The agency expects to implement this new application on October 1, 1998.
Method of Access	The application resides primarily on the user's PC and the data resides in the agency's SQL Server database management system.
Est. # of Transactions Per Hour, if appropriate	NA
Users of the Application	The application will primarily be used by the agency's Records Management Staff to record events when documents or information is formally filed with the agency. Four or five Records Management Staff will use the system on a daily basis. It is also likely that up to half of the program staff will access this system on a daily basis when it is fully operational in order to check the status on a case or to update information about future events that may occur related to a particular case.

Name of Application	Utility Name File / Reseller Database System
Description	This application is used to track and update utility service provider information on such items as legal name, legal mailing address, contact information for a variety of topics, etc. The data can be exported in order to "clean" the mailing information with zip code verification software and then updated in the database. This application maintains information about mailing lists for all active utility service provider cases filed with the PSC. This system replaces a legacy mainframe utility name file system and will eliminate potential Year 2000 concerns.
Platform	Written in PowerBuilder – runs on Windows 95 and Windows NT and uses SQL Server for database management. Hardware requirements are non-specific, but it generally runs on a Pentium-processor based machine with at least 32 MB of RAM and 20 MB of free hard disk space.
Package / Custom	This program was custom designed and written by PSC applications development staff.
Year implemented	The agency expects to implement this new application on October 1, 1998.
Method of Access	The application resides primarily on the user's PC and the data resides in the agency's SQL Server database management system.
Est. # of Transactions Per Hour, if appropriate	NA
Users of the Application	The application will primarily be used by the agency's Records Management Staff to update agency information on utility service providers whenever there are changes in such information. It will also be used to update mailing lists for various formal cases and activities. Four or five Records Management Staff will use the system on a daily basis. In addition, some member of the consumer affairs staff will use it daily to check the status of various utility service providers, i.e. are they certified to serve in Wisconsin. It is also likely that several program staff will access this system on a daily basis when it is operational in order to update information on mailing lists related to a particular case or to add contact information for particular utility service providers.

Name of Application	Agency Billing System / Time and Leave Reporting
Description	This application is a legacy mainframe application that provides the agency with the capability of directly billing utility service providers for the costs of processing applications filed with the PSC for approval. It also allows the agency to recover the balance of its program revenues through a remainder assessment from all utility service providers. This application needs to be replaced, as it is outdated and may have serious Year 2000 problems. The Time and Leave Reporting is currently done manually on paper forms and sent outside the agency for keying at a cost in excess of \$8,000 per year.
Platform	Currently, the billing application resides on the DOA mainframe system and was originally written in COBOL, but has a number of additions to the system written in a variety of languages.
Package / Custom	The agency is planning to re-write the billing application on a custom basis using PowerBuilder. The design and construction of this application will be accomplished by PSC applications development staff. The agency is currently investigating the possibility of preparing portions of the Time and Leave Reporting system using JetForm FormFlow and the rest with PowerBuilder.
Year implemented	The projected implementation date for the new system is July 1, 1999.
Method of Access	The application will reside primarily on the user's PC and the data will reside in the agency's SQL Server database management system and the WiSmart System. The user would be expected to fill out their time and leave reporting electronically using FormFlow Filler or, eventually, using a Web browser.
Est. # of Transactions Per Hour, if appropriate	NA
Users of the Application	The primary users of the billing application will be the agency budget staff, of which there are currently three staff. No other users of this system are anticipated at this time, although data from the Case Management System, the Utility Name File and the Annual Report System will be used in the new Billing System. The Time and Leave Reporting component will be used by all staff on a weekly basis.

Name of Application	Employee Training and Advancement System (ETAS)
Description	This application was created to allow the agency to track the training and development time spent by each member of the staff. The database includes information on the date of training, type of training, hours in class, continuing education credits and so forth.
Platform	This application is written using Microsoft Access 97 and runs on either Windows 9.X or Windows NT.
Package / Custom	This is a custom application written by agency applications development staff.
Year implemented	1997.
Method of Access	Users must access the database system using MS Access 97 on their desktops. The data resides on the local area network in an Access 97 database.
Est. # of Transactions Per Hour, if appropriate	NA
Users of the Application	This application is primarily used by agency support staff and by personnel in the Division of Administrative Services for tracking program staff training.

Name of Application	Legislative Action Tracking System
Description	This application was written to allow users to track the progress of legislative activity that is germane to the PSC.
Platform	This application is written using Microsoft Access 97 and runs on either Windows 9.X or Windows NT.
Package / Custom	This is a custom application written by agency applications development staff.
Year implemented	1998.
Method of Access	Users must access the database system using MS Access 97 on their desktops. The data resides on the local area network in an Access 97 database.
Est. # of Transactions Per Hour, if appropriate	NA
Users of the Application	This application is primarily used by agency staff in the Commissioner's Office to track pending legislation of interest to the agency. Agency staffs in other divisions and the PSC's Legislative Committee also use the system to check the background and status of any pending legislation involving the PSC.

Name of Application	Legal Case Tracking for Electric
Description	This application was written to provide the staff in the PSC's Electric Division to track and record activity related to court cases that involved the division's legal staff. Various activities and events are entered into the system to enable timely filing of briefs and other legal filings.
Platform	This application is written using Microsoft Access 97 and runs on either Windows 9.X or Windows NT.
Package / Custom	This is a custom application written by agency applications development staff.
Year implemented	1998.
Method of Access	Users must access the database system using MS Access 97 on their desktops. The data resides on the local area network in an Access 97 database.
Est. # of Transactions Per Hour, if appropriate	NA
Users of the Application	This application is used by agency staff in the Electric Division to track the status of court cases in which the division is required to participate.

Name of Application	Water Tariffs Database
Description	This application was written to allow staff in the Division of Water, Compliance and Consumer Affairs (DWCCA) to track water utility tariff filings.
Platform	This application is written using Microsoft Access 97 and runs on either Windows 9.X or Windows NT.
Package / Custom	This is a custom application written by agency applications development staff.
Year implemented	1997.
Method of Access	Users must access the database system using MS Access 97 on their desktops. The data resides on the local area network in an Access 97 database.
Est. # of Transactions Per Hour, if appropriate	NA
Users of the Application	This application is used by agency staff responsible for the regulation of water utilities for tracking information about rates and rules of each water utility.

DATA ARCHITECTURE / INVENTORY

The PSC's data model has not changed appreciably since it was last revised in 1995. The primary subject areas of concern to the PSC are:

- ◆ **Utility Service Provider** - an organization that provides utility service to the public and which is subject to some level of regulation by the PSC. This model addresses the relationship of the utilities to their suppliers and affiliates, their geographic locations and service areas, and includes utility physical plant and plant usage entities.
- ◆ **Utility Customer** - a person or organization using utility services. This model addresses the customer, the customer's needs and demographics, and the customer's relationship with the utility.
- ◆ **Case** - a proceeding before the Commission that results in a formal action. This model addresses the activities of the Commission in response to action requests: establishment of a formal case, holding hearings and audits, issuance of orders, and approval of tariff filings.
- ◆ **Infrastructure** - an overall representation of the regulatory environment incorporating the rules that govern the provision of utility service and their relationships with the utility industry and the defined customer classes. Two additional diagrams were created: one which further clarifies the relationships between the more abstract infrastructure model and the more discrete utility model, and another which illustrates the many forms a rule can take.
- ◆ **Employee** - a person employed by the PSC. This model addresses the relationships of the employee to the organization, to the assignment of location and equipment, and to the assignment of jobs that relate to commission business.

In the next biennium, the PSC is making a concerted effort to organize its data as it is migrated from the mainframe environment to the client-server environment on our LAN, using our SQL Server database. The agency is relying upon its data model as a guide in conducting the applications development projects it has selected for 1997 and 1998. The Customer Contact System collects and maintains information on **Utility Customers** and their on-going relationships with **Utility Service Providers**. The Case Management System will track and maintain information on events related to **Case** proceedings before the PSC that require formal action. The **Employee** Database will allow the agency to maintain personnel information in an organized manner that can then interface to an electronic timesheet system and the agency's billing system. The Utility Name File/Reseller Database provides a link between the **Utility** Annual Report System and the relationship to the Customer Contact System, Case Management System and the Billing System.

The agency's data administrator, working with other IT applications development staff, is establishing standards for data tables, storage requirements and backup on the LAN. These standards will create and ensure more useable data in the future. Data privacy and confidentiality issues will be addressed to maintain security while allowing necessary access to

data. As part of this effort, guidelines for data ownership, access authorization, data integrity and security will also be established. The agency's network administrator will develop a fault tolerance plan for network servers as part of the agency's overall disaster/business recovery plan to ensure reliability of access to the data.

TECHNOLOGY ARCHITECTURE

The PSC has divided its technology architecture into five categories: desktop hardware, network hardware, desktop operating system and applications, network operating system and applications and network connectivity infrastructure. The following is a summary of each of these five categories of technology architecture.

DESKTOP HARDWARE

Inventory: The PSC's desktop hardware consists primarily of Dell Pentium Pro or Pentium II-based desktop PCs (~175) and twelve notebook computers of at least Pentium-class, manufactured by IBM or Compaq. In addition, the PSC has 5-6 additional laptops for occasional use by technical staff performing work in the field. All current desktop PCs are being upgraded to contain a minimum of 64 MB of RAM and four GB of hard disk storage. Because of the highly technical nature of the work done by the agency, a standard was established to obtain 17" monitors for all staff. All units now being acquired also contain CD-ROM, sound and built-in Ethernet for future deployment of audio and video over the LAN. Given our current Token-Ring network, we also currently buy additional network cards for each PC purchased.

Infrastructure Replacement: As of the end of calendar year 1998, the PSC expects to be at its goal of at least a Pentium-class PC and 17" monitor on every desktop. The agency is currently budgeting to replace PCs on a four-year replacement cycle per the statewide standards. We believe that with recent price drops on hardware we will be able to continue this practice into the future.

Current technology architecture: The PSC's desktop hardware complies with the statewide IT infrastructure standards.

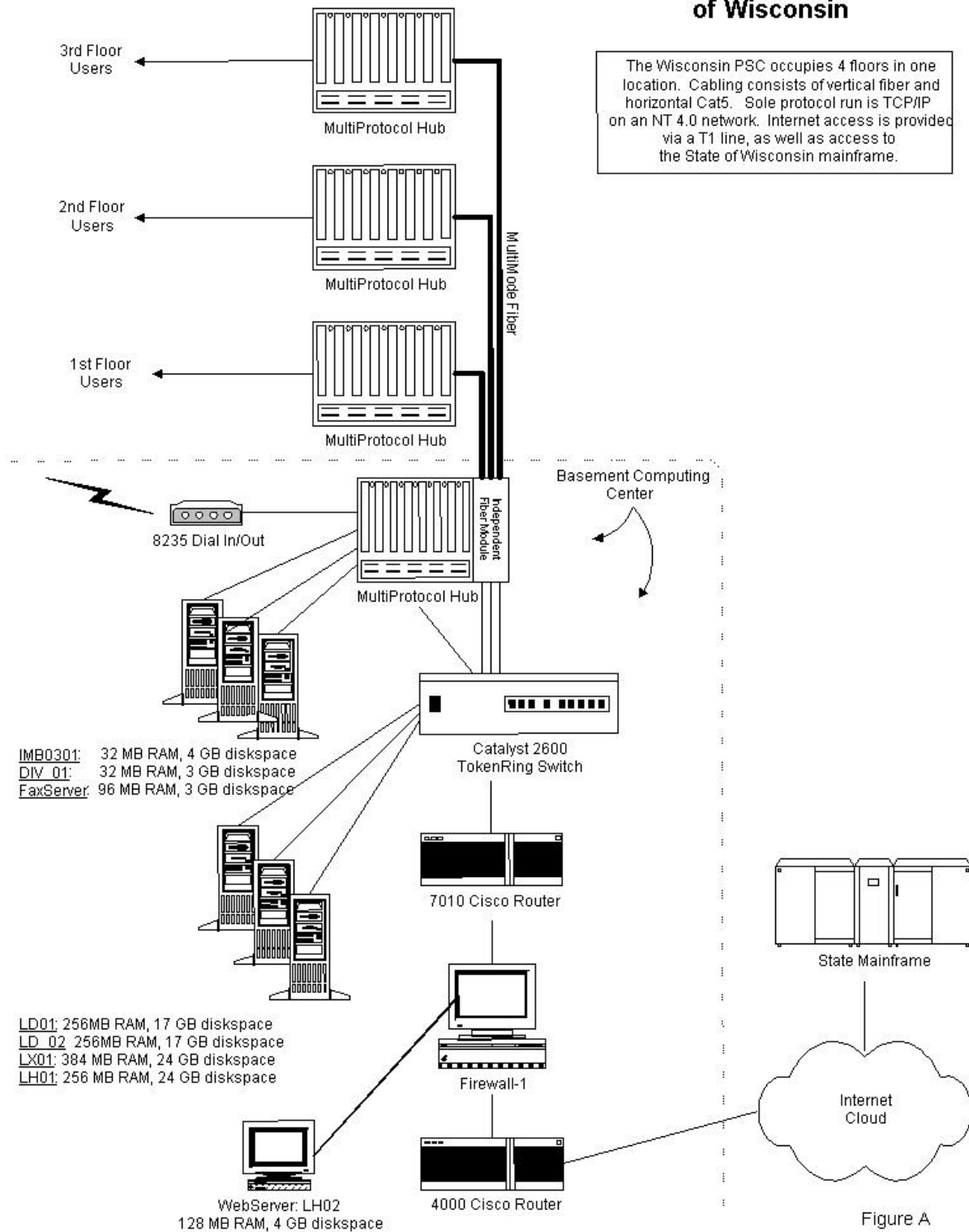
Future technology architecture: In the future, if our Ethernet migration project is approved and implemented, we will be able to reduce our costs for network connectivity, as we will no longer have to purchase Token-Ring adapters for each PC. Ethernet hardware is typically built-in on newer PCs. We will likely increase our purchase costs to consider the addition of audio and video hardware to increase the efficiency with which audio and video will be deployed over the LAN. This will also cause an increase in data storage costs, perhaps necessitating a move to larger hard disks and larger removable media (Zip disks or LS-120 instead of floppy disks). As applications and desktop operating systems become more capable and more complex, we also expect to increase the amount of system memory in PCs acquired for the desktop. As our staff becomes more mobile and dependent on e-mail, calendaring and contact lists, we may begin to deploy handheld or palm-type PC devices for some staff.

NETWORK HARDWARE

Technology Diagram: See Figure A.

Public Service Commission of Wisconsin

The Wisconsin PSC occupies 4 floors in one location. Cabling consists of vertical fiber and horizontal Cat5. Sole protocol run is TCP/IP on an NT 4.0 network. Internet access is provided via a T1 line, as well as access to the State of Wisconsin mainframe.



Inventory: List of component types, make/vendors, functional descriptions, and quantities -

Servers (file, print, and application):

- (1) HP NetServer LX-166 Pro, with 2 CPUs, 384 MB RAM, 34 GB DASD in two RAID arrays; serves as main production and application server for agency
- (1) HP NetServer LH-200 Pro, with 1 CPU, 256 MB RAM, 16 GB DASD in one RAID array; serves as agency e-mail server and gateway
- (2) HP NetServer LD-180 Pros, each with 1 CPU, 256 MB RAM, 17GB DASD; both do some print services, one serves as a development server and the other as an administrative server
- (1) HP NetServer LH-200 Pro, with 128 MB RAM, 4 GB DASD, no RAID; serves as agency Web server
- (1) IBM PS/2 server, with 60 MHz. Pentium CPU, 32 MB RAM, 6 GB DASD; primary agency code server
- (1) Omtools Fax Sr. fax server, running on Dell PC with NT 4.0; 4 modems

Backup devices:

- (1) HP 12000e tape system, DDS-2, with 6-tape magazines, for general backups
- (1) IBM 4mm DAT drive, DDS-2, for backing up e-mail server

Printers and scanners:

- (2) HP LaserJet IIIsi printers
- (3) HP LaserJet 4si printers
- (2) HP LaserJet 4mv printers
- (9) HP LaserJet 5m printers
- (1) HP LaserJet 5si printer
- (1) Canon 4550 color printer
- (4) HP DeskJet 670cxi color printers
- (1) Seiko ColorPoint color printer
- (1) HP ScanJet scanner
- (2) UMAX scanners

Infrastructure Replacement Plan: The PSC expects to use its servers and network hardware for four to five years before replacing. This cycle allows the agency to get full use from equipment, while also permitting it to take advantage of significant periodic improvements in technology.

FY 1999 Replace one IBM Micro-Channel server. Add backup server for fault tolerance. Upgrade DASD, RAM, and CPUs in HP servers. Replace 3 HP printers and the Seiko color printer.

FY 2000	Replace Token Ring network equipment with Ethernet. Replace IBM tape backup unit. Replace 5 HP printers and three Canon color printers.
FY 2001	Replace two HP Netserver with new technology servers having Fiber Channel DASD, 64 bit CPUs, and fault tolerance. Replace 3 HP laser printers and HP color printer.
FY 2002	Replace two HP Netserver with new technology servers having Fiber Channel DASD, 64 bit CPUs, and fault tolerance. Replace HP tape backup unit. Replace four HP printers.

Current technology architecture: The PSC's network hardware complies with the statewide IT infrastructure standards. An important aspect of the PSC technology definition is a commitment to remain current with all strategic software. New releases (e.g., service packs, version revisions, and new versions) are tested and implemented as quickly as is practical. Server and desktop RAM and DASD amounts are sized not only for current needs but also for expected requirements of anticipated software upgrades.

The PSC's current technology architecture is based on:

- Windows 95 and NT as desktop operating systems, with all new PCs using NT
- Microsoft Office 97 desktop suite
- Windows NT Server 4.0 as network operating system
- Microsoft Exchange Server 5.5 and Outlook 98 for e-mail, calendaring, and GroupWare
- Microsoft SQL Server 6.5 for enterprise database
- Microsoft SMS 1.2 for network management, inventory, and automated software installation
- Token Ring network, running TCP/IP protocol
- HP Netserver with Pentium Pro CPUs, RAID where appropriate
- IBM unswitched hubs for most connections; one Cisco switch for high-speed connections and VLAN partitioning
- Firewall-1 technology from Checkpoint Systems

Future technology architecture definition: The PSC expects to continue to use Microsoft products as desktop and network operating systems and as desktop application suites for the near future. Anticipated upgrades include:

- NT Server and Workstation 5.0
- Office 2000 and above
- Microsoft SQL Server 7.0
- Microsoft SMS 2.0

The PSC is also committed to upgrading network and desktop hardware. Major initiatives include:

- Convert to Ethernet network to reduce future costs and allow easier inclusion of new technology into network
- Upgrade and replace servers
- Replace some printers and copiers with LAN attached units performing both functions; reduce total number of printers on network
- Replace tape backup units

The PSC will introduce and expand the use of new technologies on its network:

- Increase the use of WWW applications for internal and external customers
- Bring audio and video applications to the network, including both internal and external customers
- Apply encryption technology to e-mail and attachments
- Increase the use of GroupWare applications
- Use SQL Server as the data manager for all strategic PSC data
- Replace analog dial-in and dial-out services with digital-capable services

DESKTOP OPERATING SYSTEMS AND APPLICATIONS

Inventory: The PSC's desktop operating systems are primarily Windows NT 4.0 on desktop PCs and Windows 98 on laptop PCs. The commercial applications installed on every PC include Microsoft Office 97, Professional Edition, MS Outlook 98 and Internet Explorer 4.01, QuickView Plus (Inso), Omtools Fax client, IBM Anti-virus and MS Systems Management client. In addition, a few staff use specialized software from a variety of vendors, including ArcView GIS software from ESRI, MS Publisher 98, JetForm FormFlow, MS Project 98, MS FrontPage 98, Adobe Acrobat and Acroreader, and a few miscellaneous applications. Finally, staff has in-house developed applications, including the Annual Report System, the Customer Contact System, and a number of Access 97 databases.

Infrastructure Replacement Plan: The PSC upgraded to Office 97 and Outlook 98 in April 1998; when it becomes available, we would expect to evaluate and implement Office 2000 to keep pace with technology. As the statewide forms environment becomes developed, we would expect to install FormFlow Filler or its successor on all desktops to be able to use forms technology for automating certain internal processes and for collecting data on the agency's Internet Web Site. We expect to upgrade our desktop anti-virus software over the next year and we are considering the deployment of some type of project management software in the future, as budget constraints will allow. We also expect to upgrade our GIS software as dictated by our business needs. Any additional desktop software would depend on the development of other projects for such items as imaging or electronic document management.

Current technology architecture: The PSC's desktop operating system and applications comply with the statewide IT infrastructure standards.

Future technology architecture: Future desktop software will likely include an upgrade to Windows NT 5.0 near the end of 1999 or (more likely) the beginning of 2000. The integration of audio and video on our local area network may also bring additional software for capturing and transmitting audio and video segments to the desktops of some PSC staff. Some technical staff may need additional Web creation tools for preparing PSC information for the agency's Internet or Intranet Web Sites. One final item under consideration is the acquisition of new cost-of-service software for electric and gas utility rate design.

NETWORK OPERATING SYSTEMS AND APPLICATIONS

Inventory: The PSC's current Operating system and applications software is listed below.

Desktop OS and Applications suite:	Windows 95 (approx. 50) Windows NT Workstation 4.0 (approx. 150) Microsoft Office 97 and Outlook 98
Network OS:	Windows NT Server 4.0 (7)
Database managers:	Microsoft Jet 3.0 (commonly known as Access) Microsoft SQL Server 6.5
Application development:	Microsoft VBA, from all Office packages Microsoft Visual Basic 5.0 PowerBuilder 6.5
Electronic mail, etc.:	Microsoft Exchange 5.5
Anti-virus software:	Cheyenne Inoculan on Exchange server; Norton Antivirus on file servers; IBM Antivirus on desktops
Inventory, administration, installation:	Microsoft SMS 1.2
Fax server:	Omttools Fax Sr., version 2.5

Infrastructure replacement plan: The major guiding principle in this case is that the PSC will stay current in all of these packages unless there are very substantial reasons that would prevent the agency from upgrading. Consequently, new versions, upgrades, service packs, etc. will be installed and implemented as quickly as possible.

The PSC does not anticipate replacement of any major pieces of software with software from other publishers during this period. In other words, all replacements will be by upgrades, new releases, and service packs.

Expected major projects will be:

- Windows NT Server 5.0 will replace 4.0 on all operational servers.
- Windows NT Workstation 5.0 will be acquired on all new PCs purchased after 5.0 becomes available; more recently acquired PCs will be upgraded; PCs with network functions will be upgraded (fax server and firewall).
- New laptops will be acquired with Windows 98.
- SQL Server 7.0 will be installed as soon as possible.
- SMS Server 2.0 will be installed as soon as possible.
- Exchange Server will be maintained at current version levels.
- Firewall and fax server software will be maintained at current version levels.
- Office 2000 will be installed on all desktops and laptops as soon as possible.
- IBM anti-virus software on desktops will be replaced with Norton software.
- Anti-virus software will have pattern files maintained at current levels, and will be upgraded when new versions are available.

Current technology architecture definition: The PSC's network operating system and applications comply with the statewide IT infrastructure standards. The PSC relies primarily on Microsoft products for operating systems, desktop application suites, database managers, and administrative software. Other packages have been selected because of their feature set and cost. The PSC network is defined as an NT domain running TCP/IP protocol.

Future technology architecture definition: The PSC does not expect any significant changes in its software architecture definition over the next few years.

NETWORK CONNECTIVITY INFRASTRUCTURE

Technology Diagram: The PSC resides in a single location and runs a TCP/IP, 16MB Token Ring network. We have a possible 340 regular and 16 switched Token Ring ports. Fiber is used to vertically connect our major components between floors and category 5 cable provides horizontal connections. We share a connection to the outside with DOR via the shared "PSC" router. This outside connection is firewall protected, with a router on either side of the firewall. Although not part of the PSC, we also provide network and Internet connectivity to the Railroad Commission that is located in our building. See Figure B for a layout of the network connectivity infrastructure at the PSC.

Inventory:

Internal Router: Cisco 7010 Router, IOS 11.1.11, one High Speed 4-port Serial Module, and one 4-port Token Ring Module

Hub0: IBM Multiprotocol Token Ring Hub (Model 8250-017-LS) with an Advanced Management Module running v. 3.10-A. Besides the basic power and fiber module, this hub offers us 40 token ring ports.

CURRENT CONNECTIVITY OF PSC TOKEN RING NETWORK

(For questions contact Sandy Bell (609) 267-2336)

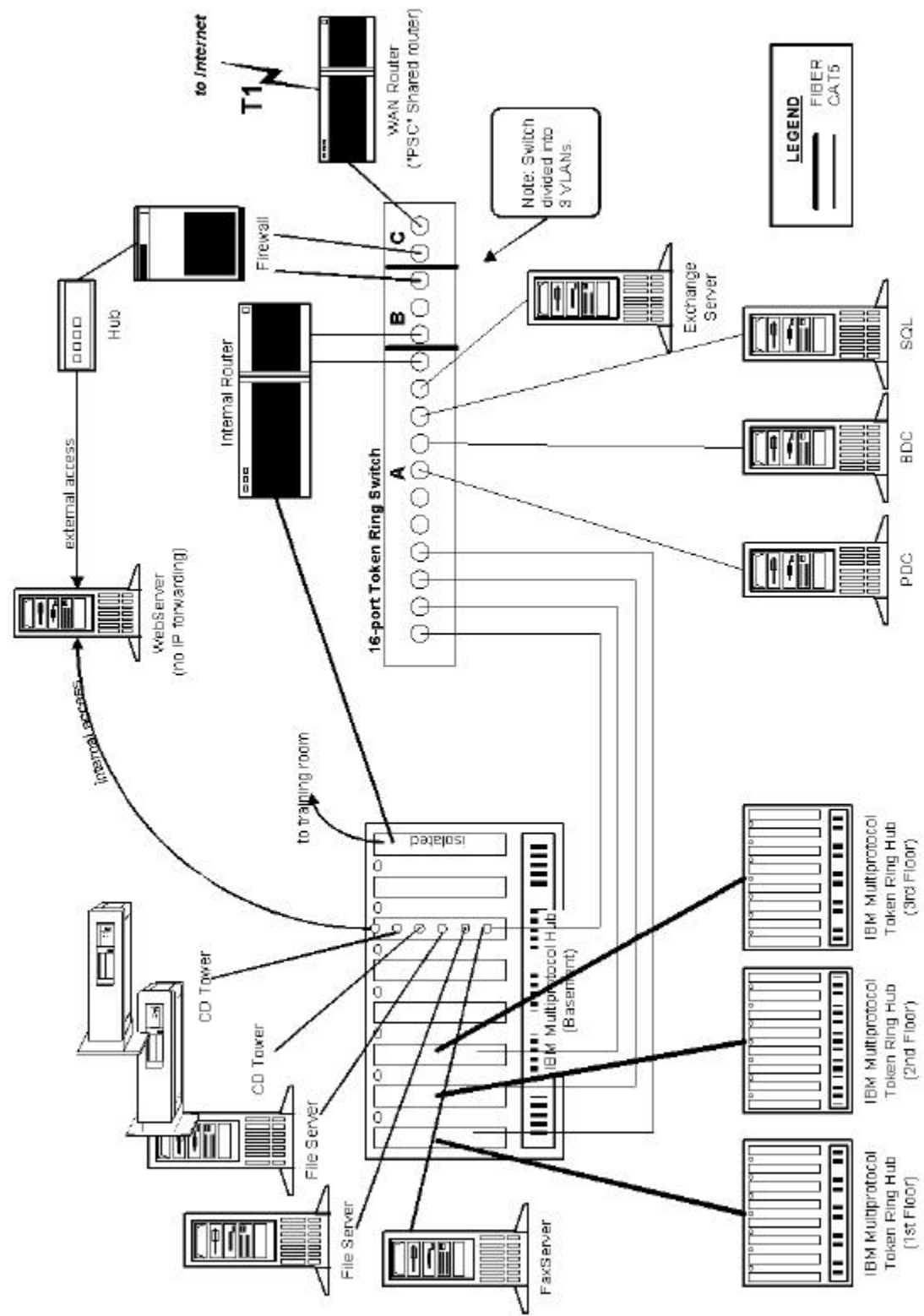


Figure B

Hub1:	IBM Multiprotocol Token Ring Hub (Model 8250-006-HC) with a Basic Management Module running v. 3.10B. Besides the basic power and fiber module, this hub offers us 20 token ring ports.
Hub2:	IBM Multiprotocol Token Ring Hub (Model 8250-017-LS) with a Basic Management Module running v. 3.10-B. Besides the basic power and fiber module, this hub offers us 140 token ring ports.
Hub3:	IBM Multiprotocol Token Ring Hub (Model 8250-017-LS) with a Basic Management Module running v. 3.10-B. Besides the basic power and fiber module, this hub offers us 140 token ring ports.
Token Ring Switch:	Cisco Catalyst 2600 Switch, Model 216, running version 3.6.1A offers us 16 switched RJ-45 token ring ports.
Firewall:	Checkpoint Firewall-1 single gateway, version 3.01B, running on a 200 MHz Dell Optiplex Gs with NT 4.0 as an operating system.
Dial-In/ Dial Out:	IBM 8235, Model 001, Token Ring Dials Switch with six attached 28.8 modems.

Infrastructure Replacement Plan: The PSC plans to move to an Ethernet network by the end of 1999. This is fully described in our Ethernet Conversion IT Project Proposal.

Current technology architecture: **The PSC's network connectivity infrastructure does not currently comply with the statewide IT infrastructure standards; however, the Ethernet Conversion Project proposed in the agency's biennial budget will bring the agency into full compliance with the statewide standards.**

Future technology architecture: Assuming our Ethernet Conversion project is approved, we will be moving to a switched Ethernet environment running TCP/IP as our sole protocol. The majority of our desktops will be connected at 10MBs, although some will be connected at 100MBs due to the type of work and applications being run. All servers will have full-duplex 100MB connections. Again, this is more fully described in our Ethernet Conversion Project Proposal.

With the increase in bandwidth to the desktop, we will also investigate the ability to provide audio and video to the desktop. Running live video from the PSC hearing room is an anticipated application as well as providing training to the desktop via audio and video on the LAN.

Along with the increase in bandwidth this would provide to both our desktops and servers, the PSC will continue to explore the possibility of increasing external connection speeds or bandwidth. Currently we share a T1 line with the Department of Revenue. A significant increase in usage may dictate a serious look at another T1 or, perhaps, the future may provide a higher-speed connection to the State's Sonet Ring network.

Another anticipated change is the increase in dial-in activity. The PSC will be exploring the use of ISDN as a reasonable alternative for increasing bandwidth for dial-in users.

ORGANIZATION ARCHITECTURE

Formal IT resources: In 1996, the PSC determined to reorganize its Bureau of Information Services (BIS) to improve its ability to meet the agency's needs for information technology resources and support. The Office of Information Technology (OIT) was formed by separating the former BIS from the Division of Administrative Services (DAS). The position of Chief Information Officer (CIO) was created to manage OIT. The CIO became a member of the agency's top management team and reports directly to the Chairman of the PSC. The role of the CIO is to focus the PSC's IT resources on meeting the goals of the agency's strategic business plan. OIT consists of two sub-units: Applications Development and Distributed Computing (PC/LAN). Beginning in 1996, all new applications developed at the PSC are client/server in nature and are created using PC-based tools, primarily PowerBuilder. The Public Service Commission of Wisconsin (PSC) has 185 full-time equivalent (FTE) employees in seven divisions, including OIT. OIT consists of the Chief Information Officer (CIO) and 12 FTE staff. An organizational chart is shown in Figure C.

Training: The IT staff at the PSC is taking great advantage of the training offered through the Department of Administration's statewide contracts. Together with internal agency funding, the availability of this resource assures the agency of being able to provide training consistent with the statewide IT infrastructure standards (120 hours per year) for each OIT staff position. With the introduction of our new Technical Education Center (TEC) we expect to be able to also meet the state standard of offering up to 40 hours per year of IT classroom training to business unit staff.

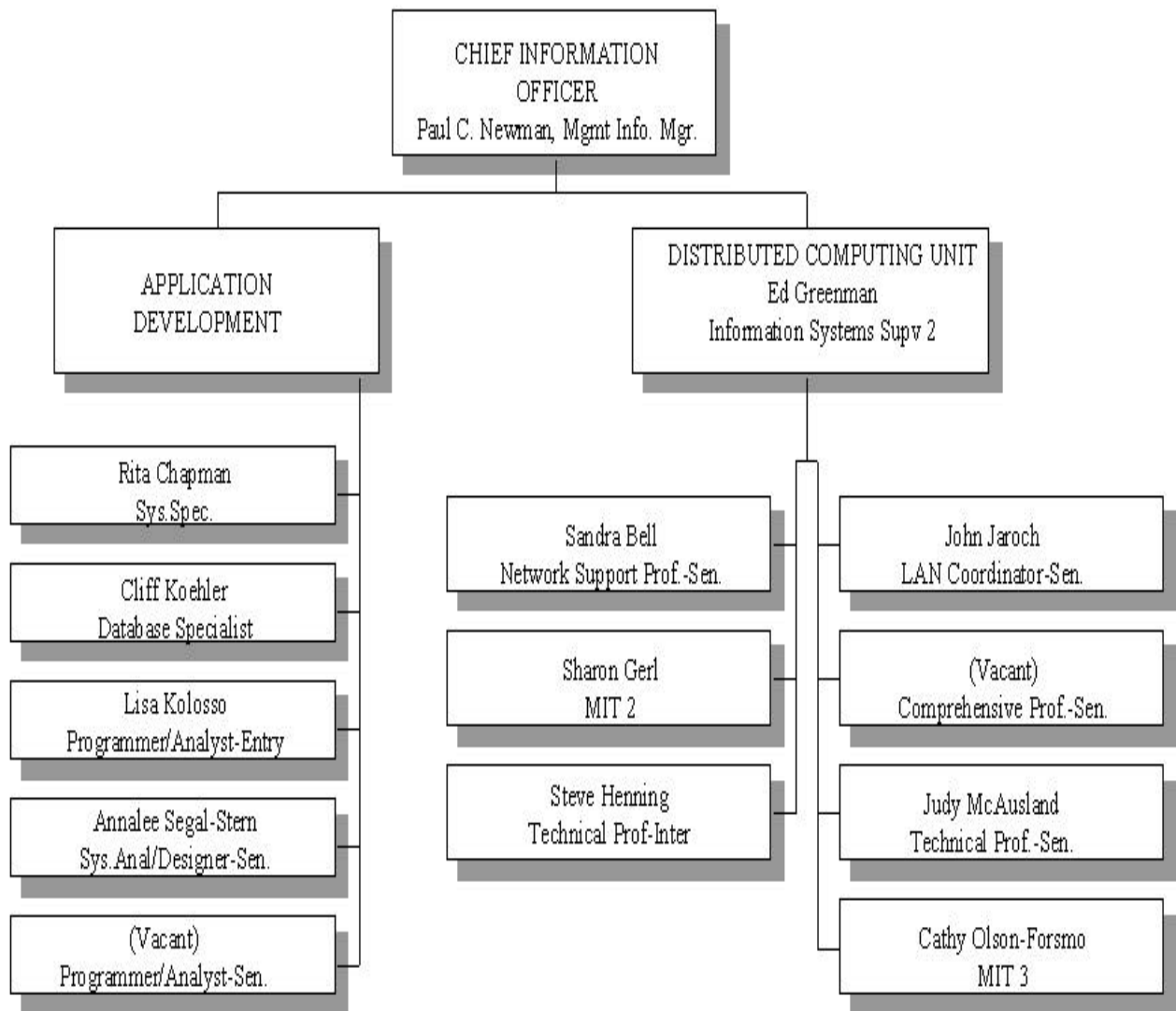
Informal IT resources: The PSC has had a history of using informal, "front-line" technical staff within the business units to provide initial helpdesk and troubleshooting services. Over the past two years, with the introduction of additional IT support staff in OIT, the use of the informal support has declined appreciably. Agency staff has been encouraged to increase their use of the OIT-supported HelpDesk services and OIT has increased its knowledge of the Office Suite products and operating system software to become more knowledgeable sources of troubleshooting expertise. The informal support in the business units has been reduced to four or five key staff people who are available to perform specialized functions (re-mapping network drives, installing print drivers, etc.) when major agency IT initiatives are conducted, such as replacing a file and print server, upgrading application suites, migrating to new e-mail packages and the like.

Future Organization: The PSC does not anticipate a great deal of change in its IT organizational architecture in the next few years. As the need for additional applications development and Web-enabled applications increases, it may be necessary to add one additional applications developer / Web developer. If this is the case, it might be necessary to select an applications development supervisor for this function, similar to the distributed computing supervisor for the network/desktop function. The planning for voice, data and video should be coordinated, and eventually consolidated within OIT, given the statewide directive of incorporating telecommunications into information technology in the agencies

Other than these possibilities, OIT is well situated to provide IT support and applications development services to the agency for the future.

OFFICE OF INFORMATION TECHNOLOGY

Public Service Commission



8/20/98

FIGURE C.

IMPLEMENTATION PLAN

An approximate timeline/workplan for conducting the IT activities described in this strategic IT plan is shown in Figure D (see next two pages). The spreadsheet shows assigned staff from OIT, lays out the project timeline for each of the projects, and prioritizes the projects based on available staff resources and available funding. The work plan has been approved by the agency's top management team and the PSC's Chairman.

PUBLIC SERVICE COMMISSION OF WISCONSIN

OFFICE OF INFORMATION TECHNOLOGY - PRIORITIES

Revised September 1, 1998

Project Description	SBP Goals	Jul-98	Aug-98	Sep-98	Oct-98	Nov-98	Dec-98	Jan-99	Feb-99	Mar-99	Apr-99	May-99	Jun-99	Jul-99	Aug-99	Sep-99	Oct-99	Staff	() = Project Leader
HIGH Priorities																			
The Great Network Upgrade - Part 3 - ETHERNET	1,2,3,4	PL	PL	PL	PL	PL	PL	PL	PL	PL	PL	A	A	D	T	IMPL	IMPL	(SAB),EWG,MCH,SH	
Utility Name File / Reseller Database	1,2	A	D	S2	S2	T	IMPL	S1	S1	S1	S1	S1	S1	S1				(CGK), TEL, RMU-DAS	
Case Management Database (CMS)	1,3	A	D	S2	S2	T	IMPL	S1	S1	S1	S1	S1	S1	S1				(RMC), RMU-DAS	
Customer Contact System (CCS) - Revisions	2,3					A	D	S2	T	IMPL	S1	S1	S1	S1				(RMC)	
Employee Database	3		A	D	S2	T	IMPL	S1	S1	S1	S1	S1	S1	S1				(AS), BHR, VAC	
PSC Website / Internet Services - New Web Server	1,2,3,4	IMPL	IMPL	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	(AS), LK	
Time and Leave Reporting System	3				A	A	D	D	S2	T	IMPL	S1	S1	S1	S1	S1		(AS), VAC, Consultant?	
Agency Billing System	1,3	A	D	D	D	D	S2	S2	S2	S2	S2	T	T	IMPL				(VAC), CGK, RMC, AS, Consultant	
MEDIUM Priorities																			
Help Desk/Technical Support	3	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	(SH), SLG, MCH, JJJ, AM, Others	
Access 97 Mini-Applications	1,2,3	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	(RMC), AS, VAC, LK	
TARS and WEGS Annual Reports - 1998	3		S1	S2	S2	END	S1	S1	S1	S1	S1							(CGK), LK	
Project Management Software Evaluation	1,2	A	S2	S2	S1	S1	S1	T	IMPL	S1	S1	S1	S1	S1				(PCN), Division Administrators/Managers	
PSC INTRANET	3		PL	PL	PL	A	D	T	IMPL									(AS), LK, COF	
Disaster, Business Recovery Planning	1,2,3	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	(PCN), EWG, MCH	
PSC Training Room set-up and implementation	3	S1	S1	S2	S2	IMPL												(SAB), JAM, PCN	
Encryption Research and implementation	1,2,3	S1	S1	S1	S1	S1	S1	D	T	T	IMPL							(EWG), PCN, SH	
Acquire, Install, cascade 46 new PCs	1,2,3,4	S2	S2	INSTALL	INSTALL	END								S2	S2	INSTALL	INSTALL	(MCH), PCN, SH, SLG, EWG	
Server Software Upgrades	3	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	(EWG), MCH, JJJ	
Desktop Operating System Upgrades - Win98 & NT 5.0	3		PL	PL	PL	PL	PL	A	A	D	T	T	T	T	T	IMPL	IMPL	(EWG), SH, MCH, JJJ, SLG	
LOWER Priorities																			
Outside e-mail access via POP3 and HTTP	3	S1	S1	S1	S1	S1	S1	IMPL	IMPL	S1	S1	S1	S1	S1	S1	S1	S1	(JJJ), MCH	
Audio and Video on the Local Area Network	1,2,3,4				PL	PL	PL	PL	PL	PL	PL	PL	A	A	D	T	IMPL	(SAB), SH, EWG, AS	
GHS Revisions to data layers, processes, & Services	1,2,3,4	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	SH, DIVISIONS	
ETAS Revision - Access 97	3							A	D	T	IMPL							(VAC), RMC	
On-going IT Strategic Planning	3,4	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	(PCN), Division Administrators	
Testing for Year 2000	3	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	(EWG), MCH, SH	
Performance Monitoring	3	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	(EWG), JJJ, MCH	
Imaging/EDI	1,2,3	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Not Assigned at this time	
Web Posting of variety of information	1,2,3,4	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	(AS), LK, COF, DIVISIONS	
Re-arrange internal IP model	3	S2	S2	S2	S2	S2	S2	IMPL	IMPL									(SAB), EWG	
Additional CD-ROM JuiceBox	3	PL	PL	PL	PL	PL	PL	PL	PL	PL	PL	IMPL	IMPL					(SH), PCN, EWG	

OTHER ITEMS (On Hold)																		
Statistical Benchmarks - DWCCA, ELEC, NGD	1,2,3	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Not Assigned at this time
Comprehensive Utility Information Database	1,2,3,4	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Not Assigned at this time
On-line catalog & ref. materials for Ref. Ctr.	3	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Not Assigned at this time
Electronic Filing of Case Materials	1,3,4	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Not Assigned at this time
Electric PCAC Database	3,4	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Not Assigned at this time
NGD Rudden Model/COSS revision or replacement	1,4	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Not Assigned at this time
NGD ARRID database development/revision	1,4	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Not Assigned at this time
Electronic Plat Maps	3	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Not Assigned at this time
On-line data collection and monitoring	1,2,3,4	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Not Assigned at this time
On-line datalink for transmission information	1,3,4	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Not Assigned at this time
Workload and priority tracking system	3	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Not Assigned at this time
Natural Gas Cost Monitoring Database	1,2,3,4	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Not Assigned at this time
Web Access to various data	1,2,3,4	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Not Assigned at this time
Web Filing of Customer complaints and inquiries	2,3	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Not Assigned at this time
Electric Cost-of-Service study	1,4	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Hold	Not Assigned at this time
On-Going Priorities																		
Data, Database Administration	1,2,3,4	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	CGK
Forms Design and Document Creation	2	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	(COF)
Video Conferencing Sessions	2,3	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SH, DIVISIONS
Maintenance Systems and Programs	3	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	VAC, CGK, SLG, RMC, JAM, EWG
Technology Evaluation	3	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	(PCN), SH, EWG
Network Administration	3	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	(EWG), JJJ, MCH, SB
Staff Training and Development for IT	3	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	(JJJ), EWG, MCH, JAM

KEY		
IMPL = Target Implementation	RMC = Rita Chapman	EWG = Ed Greenman
D = Design	SLG = Sharon Ged	JAM = Judy McAusland
SI = Staff Activity	JJJ = John Jaroeh	SH = Steve Henning
SI2 = Intense Staff Activity	CGK = Cliff Koehler	LK = Lisa Kolosso
PL = Planning	MCH = Matt Howard	SAB = Sandy Bell
PCN = Paul Newman	COF = Cathy Olson-Forsmo	VAC = Vacant Position
A = Analysis	T = Testing	

PROJECT PROPOSALS

Project Name	Ethernet Conversion/Upgrade – Migration to Standards
Description	<p>This project will convert the PSC network to a switched Ethernet environment. Any hardware items that are Token Ring-based will be replaced with Ethernet devices. Existing cabling meets our needs, with the one small exception of providing a copper connection between the basement and first floor. This project will bring the PSC into complete compliance with all of the statewide IT Infrastructure Standards. It will also alleviate any Year 2000 concerns that may exist with our current network connectivity equipment.</p>
Mission	<p>There are immediate benefits in moving from our current Token Ring network to a switched Ethernet environment. For the desktop, bandwidth is immediately increased from as many as 140 devices sharing a 16MB pathway, to each device having the sole use of no less than 10MB. Increased performance will result especially in applications that are run from the network. With a 1250% increase in bandwidth, servers providing large-scale files to client applications will show increased responsiveness.</p> <p>Redundant communication paths between the switches residing on each floor are another immediate benefit. Currently, if communication is lost to a hub, the population of an entire floor is disconnected from the network. The ability to create and implement backup paths will eliminate such large-scale disruption.</p> <p>The VLAN capabilities of the Ethernet switches will solve some of the IP address problems without needing to resort to a routed network. In addition, any problems with Y2K compliance for our token ring hubs will be eliminated.</p> <p>Long range benefits are largely strategic in nature. Firstly, our Token Ring hubs are older models. Any replacement parts or enhancements are hard to come by and costly. It is not our wish to invest further in a network type that is not a State standard. Moving to Ethernet will bring the PSC into complete compliance.</p> <p>Beyond compliance within the State, Ethernet is the prevailing standard in networking. When it comes to technical support, there is greater familiarity with Ethernet. Furthermore, the cost of Ethernet components is less and the selection greater. New technologies are always presented in Ethernet, while Token Ring versions tend to lag far behind. In addition, certain anticipated applications are better suited to the higher bandwidth made available by switched Ethernet. A good example of one such application is bringing live video and audio to the desktop.</p> <p>Future costs for printers and desktops will be reduced. Presently, these items are sold with Ethernet adapters already installed and Token Ring adapters need to be additionally purchased, installed and configured.</p>
Priority	<p>This is one of the PSC's highest priority projects during this period, certainly the highest priority for our hardware/software/network area. The only project comparable in the applications development area is the agency's revision to the Billing System. This project will help the agency meet all four of its Strategic Business Goals, it will meet the Statewide IT Infrastructure Standards and it will keep our long-term costs of operation lower than they otherwise would have been.</p>
Timetable	<p>Phase 1 -- three months</p> <ul style="list-style-type: none"> ▪ Revisit Ethernet component choices to ensure current technology ▪ order all hardware and other components ▪ order cabling enhancements ▪ schedule future changes to PSC shared router (Ethernet interface) ▪ selected staff to attend Cisco training on switch hardware and management software <p>Phase 2 -- three months</p> <ul style="list-style-type: none"> ▪ set up and test new hardware ▪ install and test Ethernet adapters for servers ▪ set up VLANs and test new network configuration ▪ finalize plans for Agency's new IP model ▪ documentation of setups and configurations is ongoing <p>Phase 3 -- one week</p> <ul style="list-style-type: none"> ▪ removal of Token Ring devices ▪ installation of new network hardware: switches, adapters

	<ul style="list-style-type: none"> ▪ installation of PSC shared router Ethernet interface ▪ modifications to desktop/server/other equipment' IP stacks ▪ final testing <ul style="list-style-type: none"> - internal network communications - internet communications - mainframe communications - Firewall operations <p>Phase 4 -- one month</p> <ul style="list-style-type: none"> ▪ Resolving any issues as they arise ▪ complete documentation
Technical Features	<p>Currently the PSC operates in a 16MB token ring environment, which does not comply with the Ethernet State standard. Briefly described, the PSC network consists of four rings which converge into a switch, with as many as 140 nodes sharing a single 16MB ring. A network connectivity diagram is attached for reference purposes.</p> <p>The planned configuration is that each desktop will have a minimum of dedicated 10MBs of bandwidth. Selected desktops will receive 100MBs due to the type of applications run, while the network servers will be given a 200MBs (full duplex) connection. To accomplish this conversion, the five major devices (hubs and Token Ring switch) which connect desktops, servers and printer to the network will be replaced with Ethernet switches. All Token Ring adapters will be removed and replaced with Ethernet adapters. (It should be noted that a large number of our existing PCs were purchased with Ethernet adapters already installed.) Our internal router will have an Ethernet module installed. Lastly, the shared PSC router will have one Token Ring interface replaced with an Ethernet connection. See attached spreadsheet (Figure E) for specific Ethernet equipment that we investigated in developing our design.</p>
Project Costs	<p>As recommended by DOA's Bureau of Technology, Policy & Planning, the PSC plans on making a master lease arrangement to fund this project. Annualized costs will be \$55,900, \$7,700 of which is for service and maintenance. A detailed cost spreadsheet is attached. (Figure E). In addition, we estimate 1.0 year of IT network staff time for planning and implementation.</p>

Project Name	Annual Report Revisions / Maintenance
Description	<p>A software application was developed for the electronic transfer of utility annual report data from utilities to the PSC databases without the need for a hard copy annual report. Utility companies are required to file annual reports of utility financial and infrastructure information with the PSC. The current requirement is for these reports to be filed in hard copy. The PSC used to hire staff each year to key this information, the data were then edited and partially validated before being loaded to the database. This project allows the data to be electronically and directly transferred without the need for keying in data. This project was completed in 1997 and future work is directed at necessary revisions and maintenance activities. One design goal for the future is to allow the software to be used for several years without making revisions every year.</p>
Mission	<p>Elimination of hard copy information in favor of electronic information that can be accessed at the desktop or from remote locations. Easier for utilities to file required data. Eliminates need to key data from filed hard copy information into PSC database(s). Reduction of potential for data errors in transcription. Revisions are directed at eliminating bugs, making the software easier to use and allowing the same software to be used for several years without modification.</p>
Priority	<p>This project is a medium priority project – certain revisions will not be made in 1998 so that applications development staff can concentrate on higher priority projects. Some of the suggested modifications <u>may</u> be made in 1999, depending on workload. Otherwise, additional changes will be held until calendar year 2000.</p>
Timetable	<p>Some modifications will be made during August-November 1998. The software will be made available to utilities no later than December 1, 1998.</p>
Technical Features	<p>The receipt of the electronic data is by e-mail or by diskette. The required format of this annual report data is such that it feeds directly to the input screens for the database tables.</p>
Project Costs	<p>0.2 years – Programmer Analyst; 0.1 years business-unit staff; no external costs or additional equipment/software are required, but the costs for copying CD-ROMS may be incurred – estimate \$1,000 or less.</p>

LOCATION	PART NUMBER	DESCRIPTION	COST	AMOUNT	Individual Item		SUB-TOTALS	MAINTENANCE
					TOTALS			
BASEMENT	WSC5505-S3FX	WSC5505 Chas, Sup III w/2-port MM/F FEC UL, AC P/S	\$ 12,066.65	1	\$ 12,066.65			
	WSC5008B/2	Catalyst 5505 Second AC Power Supply	\$ 837.50	1	\$ 837.50			
	WSC5505-EMS-LIC	Catalyst 5505 RMON Agent License	\$ 1,001.65	1	\$ 1,001.65			
	WS-X5225R	24 Port 10/100BaseTX Backbone Switching (FEC, 802.1Q/ISL, RJ-45)	\$ 6,696.65	1	\$ 6,696.65			
	WS-X5013	Catalyst 5000 Ethernet Switching Module (10BaseT, 24 RJ-45) - training room	\$ 3,346.65	1	\$ 3,346.65			
	CON-SNT-WSC5505	SNT Service, WSC5505, 2 Cat. 5500 chassis, 5 slot, 3.6gbps BP	\$ 2,000.00	1				\$ 2,000.00
Total for Basement							\$ 23,939.10	
2ND FLOOR	WSC5505-S3FX	WSC5505 Chas, Sup III w/2-port MM/F FEC UL, AC P/S	\$ 12,066.65	1	\$ 12,066.65			
	WSC5505-EMS-LIC	Catalyst 5505 RMON Agent License	\$ 1,001.65	1	\$ 1,001.65			
	WS-X5012	48 Port 10BT Desktop Ethernet Switching Module	\$ 5,021.65	3	\$ 15,064.95			
	CON-SNT-WSC5505	SNT Service, WSC5505, 2 Cat. 5500 chassis, 5 slot, 3.6gbps BP	\$ 2,000.00	1				\$ 2,000.00
Total for 2nd Floor							\$ 28,123.25	
3RD FLOOR	WSC5505-S3FX	WSC5505 Chas, Sup III w/2-port MM/F FEC UL, AC P/S	\$ 12,066.65	1	\$ 12,066.65			
	WSC5505-EMS-LIC	Catalyst 5505 RMON Agent License	\$ 1,001.65	1	\$ 1,001.65			
	WS-X5012	48 Port 10BT Desktop Ethernet Switching Module	\$ 5,021.65	3	\$ 15,064.95			
	CON-SNT-WSC5505	SNT Service, WSC5505, 2 Cat. 5500 chassis, 5 slot, 3.6gbps BP	\$ 2,000.00	1				\$ 2,000.00
Total for 3rd Floor							\$ 28,123.25	
OTHER	CWSI-2.1-WIN-NT	CWSI, for Windows NT, OpenView, Standalone	\$ 5,356.65	1	\$ 5,356.65			
	CON-SAU-NMS-SHNT	SAU Service, CiscoWorks for Switched Internetworks-Win NT	\$ 1,700.00	1				\$ 1,700.00
	WS-X5224-3PACK	Fast Ethernet 10/100 3 Pack of WS-X5224, 3x24-ports RJ-45 - one each floor	\$ 20,695.50	1	\$ 20,695.50			
		Trade in for 2600 Token Ring Switch	(\$2,000.00)	1	\$ (2,000.00)			
		Credit for TokenRing Hubs - credited on a per port basis	(\$40.00)	348	\$ (13,920.00)			
		ISL NICs for Servers	\$ 469.00	8	\$ 3,752.00			
		Patch cables	\$ 4.66	200	\$ 932.00			
		EIP-6 Ethernet module for 7010 router	\$ 10,720.00	1	\$ 10,720.00			
		Fiber adapters (from ST to SC connectors)	\$ 55.00	7	\$ 385.00			
		Copper drop from 1st floor closet to basement room	\$ 300.00	1	\$ 300.00			
		Ethernet cards for firewall	\$ 100.00	2	\$ 200.00			
		Additional PCI Ethernet NICs	\$ 80.00	35	\$ 2,800.00			
		Additional ISA Ethernet NICs	\$ 160.00	4	\$ 640.00			
		PCMCIA Ethernet cards for Laptops	\$ 130.00	12	\$ 1,560.00			
		Ethernet replacement for 8235 capability (4 serial, 2 ISDN)	\$ 4,393.00	1	\$ 4,393.00			
		Telco cables	\$ 34.15	24	\$ 819.60			
		Sniffer NIC cards	\$ 500.00	2	\$ 1,000.00			
		Training: "Configuring Cisco Catalyst 5000 Series"	\$ 2,195.00	2	\$ 4,390.00			
		Training: "CiscoWorks for Switched Internetworks"	\$ 1,595.00	2	\$ 3,190.00			
		CD Tower Ethernet Card and installation	\$ 800.00	1	\$ 800.00			
		Ethernet print servers	\$ 477.00	8	\$ 3,816.00			
Total for Other Needs							\$ 49,829.75	
SUBTOTAL							\$ 130,015.35	
Maintenance								\$ 7,700.00
GRAND TOTAL								

Figure E

Project Name	Customer Contact System Revision / Maintenance
Description	A software application was developed to record and track inquiries, complaints and opinions submitted to the agency by utility customers and other entities who contact the PSC to present their comments on a particular subject or case. The PSC currently records information on about 10,000 complaints, inquiries and opinions each year with this system. The project to revise the software will incorporate changes based on the other projects completed, e.g., the Utility Name File/Reseller Database, The Employee Database and the Case Management System.
Mission	The application is primarily used by the agency's consumer specialists in the Division of Water, Compliance and Consumer Affairs (DWCCA). There are 5-6 daily users of the system. Other staff in the agency has been given access to the system and uses it occasionally; the number of these users varies from 5-30. The revisions to the system will allow more ease of use and access to more of the data in the agency's SQL Server database.
Priority	This project is a high priority project – certain revisions must be made in 1998 so that information on cases is available to the consumer specialists. This project supports strategic business goals 2 and 3.
Timetable	We currently project that these modifications will be accomplished from November 1998 to June 1999. However, work on implementing a new billing system for the agency will take precedence over the revisions needed for the customer contact system. It may be necessary to delay this project beyond its expected start and end dates.
Technical Features	This system uses data from the Utility Name File, the Employee Database and the Case Management System. It ultimately will be used by a large portion of the staff for recording most contacts from outside the agency.
Project Costs	0.4 years – Programmer Analyst; 0.2 years business-unit staff; no external costs or additional equipment/software are required.

Project Name	Utility Name File / Reseller Database
Description	This application is used to track and update utility service provider information on such items as legal name, legal mailing address, contact information for a variety of topics, etc. The data can be exported in order to “clean” the mailing information with zip code verification software and then updated in the database. This application maintains information about mailing lists for all active utility service provider cases filed with the PSC. This system will replace a legacy mainframe utility name file system and will eliminate potential Year 2000 concerns.
Mission	This application is intended to improve access to more current information on each of the utility service providers regulated by the PSC. As more utility services are deregulated, the number of new service providers that will need to be tracked by the PSC is expected to increase. Several of these service providers do business under different names and at different locations. The database will be used to track this information as well as mailing list information on cases pending before the PSC related to a particular utility service provider. Having this application on the LAN will allow the agency to improve the accuracy of its mailing lists as well, using zip code verification software.
Priority	Because of Year 2000 concerns, this is a high priority applications development project. Data from this system will be an input to the new agency Billing System; therefore, it must be completed before the commencement of work on the Billing System. It will also serve a critical business need in helping the agency to process applications in a more timely manner by keeping mailing lists up-to-date and accurate. This project will support business goals 1 and 2.
Timetable	The coding on this project is expected to be completed by September 1, 1998. After this, some work will be necessary to move data from the existing legacy systems to this new system. Assistance from the program staff will be necessary to clean up data before appending it to the new system. The system should be operational by the end of 1998.
Technical Features	New interface will allow import and export of mailing address information so that the data can be “cleaned” using AccuZip zip code and address verification software. The new interface will also allow for organizations other than typical utilities (resellers, power marketers, etc.) to be entered and maintained within the database.
Project Costs	0.3 years of programmer/analyst; 0.1 years of program staff; no external costs or additional equipment/software are required.

Project Name	Case Management System
Description	The current case management system is used primarily by records management staff to manage formal docketed case files. This legacy system should be replaced and modernized to better manage data and make it more useable to agency staff. The project will completely redesign and replace the current case management system. This redesign will allow more functionality and access needed so this database can be used more effectively by staff other than records management personnel. The new system will serve a variety of functions and fulfill various user needs.
Mission	Redesign or replace the case management system to add functionality plus increase accessibility and usefulness to Commissioners, staff and the public, as well as eliminate Year 2000 concerns.
Priority	Because of Year 2000 concerns, this is a high priority applications development project. It will also serve a critical business need in helping the agency better manage its case load in order to process applications in a more timely manner. This project will also support business goals 1,2 and 3 and will help staff to meet the standards in Wisconsin Act 204.
Timetable	Planned Start Date: July 1998 Estimated Time: Four Months Expected Life of Application: One Year until revisions / modifications
Technical Features	<p>This improved case management system will have the functionality of modern docket management systems. This system will be network friendly in a way that allows for integration of data, avoids duplication, increases usability and accessibility.</p> <p><u>Steps in the Process:</u> Reevaluation of Needed Information Consideration of effort to download historic information Design and construction of the system Design of screen displays and menus Prototype Testing and Feedback Assessment of needs for output, report writer Determination of data retention requirements Installation, training and support</p> <p>Benefits: Increased efficiency of handling confidential data, a user-friendly system that has efficient screen design and menus, agencywide access. More analytical and reporting capabilities. Eventual public access to information through the Web site.</p>
Project Costs	0.4 years – Programmer Analyst; 0.1 years business-unit staff; 0.2 years network/PC staff; no external costs or additional equipment/software are required.

Project Name	Employee Database / Time & Leave Reporting System
Description	This application will be designed to make employee data more useable and to pull information from the mainframe databases maintained by DOA and DER for use in the PSC's client-server, PC/LAN environment. Once the data is available for use by other applications, the project will be extended into the development of an electronic time sheet and leave reporting system that is consistent with the data required by DOA. This will enable PSC staff to fill out timesheets and leave request information and route them electronically via e-mail. In turn, this will allow the data to be verified closer to the source of the data and the process of gaining acceptance by the supervisor (signature) will be automated. Automating this process will also allow the agency to avoid having the data manually keyed by an outside vendor, resulting in annual savings of more than \$8,000.
Mission	This project is intended to improve the efficiency with which human resource personnel can prepare necessary reports and perform analysis of employee data. It will also provide the means to transform a cumbersome paper process into an electronic process for time and leave reporting. This will also provide the foundation for supplying the necessary data for the agency's revised Billing System.
Priority	This is a high priority project because of the need to use the data that results from this project as input into the revision of the Billing System. The revised Billing System depends on data regarding employee time spent on specific utility cases to directly bill utilities for the costs of staff time required to process their regulatory applications. This project meets the agency's strategic business goal #3.
Timetable	The project began in July 1998. It is expected to continue throughout calendar year 1998 and conclude in the spring of 1999. Actual roll out of the new system is expected to occur in concert with the revised Billing System on July 1, 1999.
Technical Features	We are investigating the possibility of using FormFlow software for form creation, workflow routing and digital signature capabilities. Whether this software is capable of performing all of the functions that will be required for the new system remains to be determined. In any event, some programming with PowerBuilder and linking to the agency's SQL Server database will likely also be required.
Project Costs	0.5 years of programmer/analyst time; 0.25 years of forms designer time; 0.5 years of business unit staff time; no other external costs for equipment, software or outside contracting will be required.

Project Name	Agency Billing System
Description	The Commission directly bills specific utilities or renders a remainder assessment to all utilities for the costs that it incurs in its operations while maintaining accounts receivable information. When costs are properly coded and recorded in the appropriate systems, the billing function could be performed electronically by extracting and aggregating the required elements from the appropriate databases. Many of the billing and accounts receivable functions are presently performed manually, are done piecemeal using several automated files that require additional steps to merge the data, or not at all. The new system will provide significant improvement in the process of billing the Commission's costs to the utilities that cause the expense to be incurred, rather than spreading those costs across the entire utility industry in Wisconsin. It will generate billing data which will interface with the Wisconsin State Management Accounting and Reporting Tool (WiSMART), thereby providing the state with the data required by the State Controllers Office (SCO) to manage accounts receivable on a statewide basis. The new system will be developed based on billing requirements, including possible statutory changes and state accounting requirements, and will also be designed to eliminate Year 2000 problems.
Mission	Complete the required WiSMART accounts receivable interface, then re-engineer the new system to be automated/integrated with other systems such as payroll and employee expense, case management, utility name and address files, accounts receivable/invoicing system, employee time and leave reporting and annual report data. Currently, the Commission has no accounts receivable system. A well-designed system will reduce the time between billing and collection of revenues, thus improving the state's cash flow position. The new billing system will produce an invoice that meets the need expressed by our customers to include a description of the service provided. The amount of staff time to produce invoices for the various billing functions of the Commission and answer customer-billing questions will be reduced through the on-line accounts receivable system. In the process of creating a new billing system, it is also envisioned that an automated time recording system could be developed, thereby not only saving large amounts of staff time and contract labor costs in keying timesheet data into the billing system, but also saving the entire staff of approximately 180 employees the manual preparation and review of hard copy timesheets
Priority	This project addresses business goal #3, but also resolves Year 2000 concerns with the present billing system. Therefore, it is a high priority project. It depends on successful completion of the Case Management System, the Employee Database/Time and Leave Reporting System, and the Utility Name File / Reseller Database System.
Timetable	Planned Start Date: October 1998 Estimated Length of Time: Nine months – Implement new system on 7/1/99. Expected Life: Indefinite.
Technical Features	Electronic interface with payroll, time sheets and WiSMART systems. Ability to sort and summarize WiSMART PSC revenue/receivable data. The system will be menu-driven to allow flexibility for changes in billing methods, delimiters, and updated input requirements.
Project Costs	1.2 years FTE of Programmer/Analyst and Database Administrator; 0.5 years FTE program staff; minimal amount of mainframe CPU time for testing of interface for data upload/download; possible ~\$50,000 for outside contract programming expense; no other external costs for equipment or software costs.

Project Name	Agency Web Site – Internet and Intranet
Description	The agency's Internet Web Site is actually a series of small projects needed to provide current information to the public and utilities about the PSC and its activities. Information on the Web Site is organized by industry (electric, natural gas, telecommunications, and water) and includes information on upcoming events (hearings, PSC open meetings, press releases, etc.) A number of "specialty applications" have been created to convey specific information about a particular area of interest; i.e., water rates by county, scanned comments on particular cases, etc. Future uses may include access to on-line databases for such items as utility annual report information, case management information or listings of utility service providers in a particular service territory. The agency also plans to implement an Intranet site on the local area network to allow PSC staff to access information pertinent to the agency (insurance and other benefits information, work rules, practice and procedures manuals, etc.) Providing this type of information electronically will reduce copying costs and make the information more readily available to agency staff.
Mission	The Internet Web site provides easier access to agency products (orders, notices, reports) and information about agency activities to anyone with Internet access. This saves significant staff time in finding and reproducing information to meet customers' needs. It also provides an easier method for communicating complex technical information to utilities, consultants and interested members of the public about the PSC's actions. The Agency Intranet site will improve the efficiency of internal communications as well and reduce the time necessary to make and circulate updates to agency policies and procedures.
Priority	This is a medium priority project. The IT applications development staff administers and maintains the agency's Internet Web Site. Agency program staff determine the content of information made available on the site, but the IT staff is responsible for final formatting and loading of the information to the Internet Site. Because of the need to complete higher priority work, the time to work on this project is restricted by the timetable of other applications development projects. The work on the agency Intranet site is currently a low-priority project.
Timetable	Work in the Internet Web site is on going and somewhat constant. Special Web-related projects that will come up in the future are likely to consume significant amounts of IT staff time and may require some additional training for agency IT development staff. The estimated date for implementation of the agency Intranet site is no later than the end of calendar year 1999.
Technical Features	The agency uses MS Windows NT 4.0 Server and MS Internet Information Server 4.0 (IIS) for providing Web services. FrontPage 98 is used for Web site creation and a number of other tools are used for certain content (scanners, Adobe Acrobat, Corel Draw, etc.)
Project Costs	0.5 years programmer/analyst time each year; 2.0 years of program staff time for content creation; no additional external costs will be required, although the current Web Server hardware and software had initial costs of ~\$10,000. Additional upgrades of the server environment may occur for RAM or DASD, but these costs are minor and will be funded within the agency's existing budget.

Project Name	Audio / Video on the LAN
Description	The agency invested in a state-of-the-art video conferencing system when it moved to its present location in 1995. This system has been used for conducting distance learning activities, as well as for hearings and public meetings. The Audio/Video on the LAN project seeks to more thoroughly deploy that investment by introducing hardware and software that can broadcast the video conferencing signal to users' desktops. This add-on technology can deliver high-quality full-motion video to the desktop for such functions as employee training, executive briefings, hearings and other meetings, and news and event casting.
Mission	This technology will potentially allow the agency to provide new services to its staff and to its customers, primarily the regulated utility service providers. The agency will be able to broadcast training materials and other news items directly to the desktop of any staff member over its local area network. The project may also result in the agency being able to multi-cast events, such as open meetings or hearings directly to the desktops or conference rooms of interested customers.
Priority	This is a low-priority project, primarily because the agency does not yet have the network infrastructure yet to support it. This project is dependent on approval and implementation of the Ethernet Conversion/Upgrade project in order to assure that there is adequate bandwidth on the agency's local area network to support the add-on technology.
Timetable	We have investigated two different competing technologies to date; however, funding of this project is directly dependent on completion of the Ethernet Conversion Project. Therefore, further implementation of this project will not commence until sometime in calendar year 2000.
Technical Features	The technology being investigated is referred to as IP Multi-casting. The latest technology developments allow for real-time bandwidth optimization, bandwidth scalability and predictability, network monitoring and metering, and can also provide access to multi-cast signals over non-multi-cast enabled networks and desktop PCs. The hardware and software can accept audio and/or video input from a variety of sources, including the agency's video conferencing system.
Project Costs	Estimated acquisition costs: \$25,000-\$30,000. This figure includes hardware, software and installation. It does not include training and on-going management of the system, although some training at the time of installation will be included.

Project Name	Training Room / In-house staff IT Training
Description	This project will provide assistance to users in the form of technical support and application training necessary to perform their job functions more efficiently. This project will include training users on how to use the standard MS Office 97 suite of applications most efficiently as well as other specialized applications developed by the agency.
Mission	The purpose of this project is to offer additional "hands-on" training opportunities to PSC staff to enable them to more efficiently use information technology tools provided by the agency. The training center will allow the agency to offer customized training events that meet specific needs of PSC staff that will focus on certain important features of each of the software or hardware products.
Priority	This is a medium priority project. It supports the statewide IT infrastructure standard of providing up to 40 hours per year of IT training for agency program staff. This project supports goal 3 of the agency's strategic business plan goals.
Timetable	Survey users to determine their individual needs. Assess agency resources needed to provide overall agency and division training and support. Plan and implement the training in the agency's new Technical Education Center (TEC). The TEC will be fully equipped by November 1, 1998 and regular training classes will be offered beginning in January 1999.
Technical Features	The TEC will be fully network-connected with the rest of the agency's local area network that will allow sharing of files and Internet access in the training room to enable focusing on application-specific training and real-life examples. The TEC will be equipped with 10 desktop computers, a multimedia computer, a multimedia projector and whiteboard.
Project Costs	Annual costs for space have been factored into the agency's current budget. Equipment is largely available from replacement of existing systems on user desktops. Wiring costs have been factored into space costs. \$5,000 annually has been allocated for training materials and outside training contractors.

Project Name	Encryption / Digital Signature Research
Description	The purpose of this project is to investigate the available technologies for allowing files and e-mail messages to be encrypted to assure secure and confidential communications and data transfers. The project will also examine the technology available for providing digital signatures, which will pave the way for electronic document interchange (EDI) that will meet any and all legal requirements for signatures and data verification. This will allow more transactions to take place electronically, rather than having information submitted on paper.
Mission	The project is intended to research and evaluate the available technology for possible implementation in the future. If successful, the agency will ultimately deploy a specific technology and specify its use for suppliers (utilities and consultants) who wish to do business electronically with the PSC. This would then allow for electronic filing of applications, testimony, briefs and other formal filings with the agency.
Priority	This is a medium priority project. This project will be conducted by agency IT/LAN staff, rather than by applications development staff. This project must be completed prior to consideration of other types of electronic document management projects, as the need for secure and verifiable signatures and data files must be met before any further electronic processes can be developed. Completion of this project will assist the agency in meeting business goals 1, 2, and 3.
Timetable	Complete research and select products for evaluation by Spring of 1999. Evaluate available products by Summer 1999. Select appropriate technology and implement by the end of 1999, depending on the cost of implementation.
Technical Features	Encryption technology selected must be rigorous enough withstand casual attempts to break the encryption scheme. Technology selected should be expected to be useful for several years without significant upgrade.
Project Costs	Unknown until further research is conducted. Potentially, the cost could be as much as \$100-\$200 per desktop, which for the PSC would represent an investment of as much as \$40,000 for software and additional costs for training and implementation.

Project Name	GIS Data Standard / Power Plant Siting Service
Description	The Commission currently cooperates with various utilities and state agencies who maintain GIS base maps. However, not all of this data is in a format that is readily accessible to the agency. One of the goals of this project is to work with DOA and other agencies (like DNR) to insure that certain data layers are compatible across the state. Then, the PSC intends to explore the possibility of providing a Power Plant Siting Service.
Mission	The initial responsibility for the siting of power plant facilities lies with the electric generation service provider (utilities and merchant plants). The typical activities of the Commission are to review, monitor and authorize the needed projects. The Commission process includes an engineering, economic and environmental analysis of utility projects. In addition, the Commission has the responsibility to inform Wisconsin citizens of the utility projects and their impacts. The PSC believes that one way to fulfill its statutory obligations would be to provide a Power Plant Siting Service through the use of GIS data layers for location of such things as water supply, natural gas pipeline, railroad facilities, previously-disturbed brown field sites, etc. Using GIS, the PSC could pinpoint sites for potential power plant owners for which the PSC would streamline the review process. This would improve the reliability of service without causing undue harm to the natural environment.
Priority	This is a low priority project, as it depends first on getting the cooperation of other state agencies to standardize the format of certain GIS-specific data layers that would be needed to be able to provide the services described above. It would further the PSC's strategic business goals 1 and 2.
Timetable	The timetable for providing this type of service and completing the project is undefined as of this time. We estimate it may take as much as a year or more to gather the necessary data in the proper format. After this, the agency will need to examine the ways in which the new service can be provided and what the staffing requirements may be. We would anticipate that the offering of this service is at least two years in the future.
Technical Features	Offering this type of information could be accomplished through the use of the PSC's existing ArcView software and hardware, provided the necessary data was available and that PSC processes were adjusted to accommodate this type of service offering.
Project Costs	Additional Hardware and Software: \$10,000, including a high-speed large-image plotter. Estimate staffing requirements of 1.5 FTE, which might be available from reallocation of existing staff. Additional staff training would be required to increase the familiarity with the GIS hardware and software and to provide an increase in the number of knowledgeable staff capable of analyzing and updating the data.

Project Name	Project Management Software Evaluation
Description	With the passage of Wisconsin Act 204 and the need to improve the efficiency with which the agency processes utility applications for rate adjustments, construction authority and so forth, the agency's managers have expressed an increased interest in using technology to assist them in managing the various cases and processes that come before the PSC. A needs assessment is required to determine what kinds of project management information is required for each type of case. Then an evaluation of available technology to aid in managing the projects will be conducted. Finally, either a commercial software package will be selected and implemented or the PSC applications staff will commence a project to create a custom package that better meets the business users' needs.
Mission	The project is intended to provide agency managers and lead workers with a technology tool that will aid them in improving the agency's processing of cases filed with the PSC for approval. The selected or developed software should help the managers benchmark the existing projects, set priorities, juggle schedules and better manage staff resources.
Priority	This project will help the Commission better meet its strategic business goals 1 and 2 and should conform to the objectives of goal 3. However, work on this project will depend on the assistance and active participation of agency business unit staff; consequently, given the existing workload, this project is rated as a medium priority.
Timetable	Needs Assessment – 3 rd quarter of 1998 Software evaluation – 4 th quarter of 1998 Selection and implementation (if purchased) – January 1999 Development of custom application (if necessary) would begin July 1999.
Technical Features	Several commercially available project management software packages exist; however, the PSC has not thoroughly examined the available alternatives to determine which one would best meet the agency's business needs. The project is simplified because the agency's existing hardware and network environments will surely be adequate to run any software package selected. One of the primary selection criteria beyond functionality and ease of use will likely be initial cost, because if most of the staff will be required to have access to the chosen system, costs may be quite high unless the system can be set up with concurrent licensing.
Project Costs	Costs for project management software evaluation: 0.3 years IT staff time; 0.6 years business unit staff time. Cost of acquisition of required software: \$10,000 - \$25,000. Training costs: \$10,000 plus staff time to attend.

Project Name	Disaster / Business Resumption
Description	Develop and implement a security, disaster and business recovery plan. Development of ongoing security and restoration plans for IS, mainframe, LAN and PC's systems to avoid lengthy disruptions or delays in the delivery of continuing service to the public, in the event of a disaster.
Mission	Begin to develop the business resumption portion of a recovery plan at the PSC, including assessment of fault tolerance on the agency's existing servers and network. Assess the requirements for a PSC LAN and PC disaster plan. Arrange for consultation with DOA, when available, for their disaster recovery planning assistance.
Priority	This is a medium priority project. It depends on first completing an assessment of fault tolerance improvements that can be made to the agency's existing network configuration and then a plan to continuously upgrade the fault tolerance of the network. Then a plan must be developed for business resumption in case of a more catastrophic event. This project is consistent with all four of the agency's strategic business goals.
Timetable	PSC will begin the project with the development of a fault tolerance plan and then expand the project to a complete disaster recovery plan. The project timeline will extend over 2 years
Technical Features	<p>The security, disaster and business recovery plan should address:</p> <ul style="list-style-type: none"> - Electrical power supply and backup connections for the LAN and links to the Info Tech Computer Center and consolidated data network. - Logon IDs and passwords. - Fire protection. - Virus protection. - Confidential data. - Data backup and storage at offsite location. - Data restore. - Software copyright/licensing agreements. - Disaster recovery procedures. - Personnel responsible for disaster recovery and their duties. - Equipment, relocation and space requirements, supplies, and procedures necessary to restore IS.
Project Costs	0.7 years of OIT staff; 0.7 years of business staff over two years. Backup software and hardware for the LAN will need to be upgraded and additional DASD may be required. For fault tolerance, additional servers and possibly clustering software will also be required. Cost at this time is estimated to be in the range of \$30,000-\$60,000. The agency would expect to investigate such technology over the next two years and request additional funding, if necessary, in the next biennial budget.

Project Name	Electronic Filing / Document Imaging
Description	Development of a system to electronically receive, store, access and transfer documents received by the PSC. The PSC has the jurisdiction to monitor and regulate public utilities and other related service providers in this state. Commission activities include the daily receipt, tracking, file maintenance and storage of many documents associated with docketed hearings and other regulatory correspondence. Manual routing of these documents for comments, analysis or approval to multi-members of the staff and commissioners results in workflow delays, lack of concurrent access to the information, questionable security measures for confidential data, loss and duplication of documents.
Mission	<p>In order to achieve the tremendous power and benefits from automating the workflow process, a re-engineering of these processes is necessary with the help of a consultant before proceeding with any technical specifications or requirements. During this time, better technologies should evolve and more experience will be available for evaluation of currently operating EDM systems.</p> <p>The initial EDM project contemplated will be a pilot project in Records Management planned to simplify and organize the document filing, indexing, routing and tracking processes. The results of this pilot project will allow for the assessment of productivity enhancements and cost savings from electronic filing, scanning and imaging systems that could be achieved if EDM was fully implemented.</p>
Priority	A low prioritization of this project will allow sufficient time for the analysis of the present systems and for completion of the research and evaluation of encryption and digital signature technology. This project will ultimately meet the agency's strategic business goals 1,2 and 3.
Timetable	Electronic Document Management (EDM) will get underway with a pilot project. The results of this pilot project will allow for the assessment of productivity enhancements and cost savings from electronic filing, scanning and imaging systems that could be achieved if EDM was fully implemented. A re-engineering of the workflow process will be necessary to achieve the tremendous power and benefits from imaging technology. EDM will require a substantial amount of IT and business staff resources to be initially implemented by the end of calendar year 2000.
Technical Features	The technical features and the hardware for the pilot project will be compatible with our client/server LAN technology. The project will be planned in compliance with industry standards and state guidelines as they relate to document formatting standards, optical disk standards, networking standards, data base features, supporting data interface, relational technology, and Binary Large Objects technology.
Project Costs	It is still too early to estimate what this project will cost. If everything proceeds as planned, we would expect to firm up estimated costs in time for the next biennial budget cycle.